

1 UNITED STATES PATENT AND TRADEMARK OFFICE
2 BEFORE THE PATENT TRIAL AND APPEAL BOARD

3
4 APPLE INC.,

5 Petitioner,

6 V.

7 FINTIV, INC.,

8 Patent Owner.

9 Case No. IPR2023-00398

10 U.S. Patent No. 10,438,196

11
12
13 DEPOSITION OF HENRY H. HOUH, PH.D.

14 APPEARING REMOTELY

15 VIA ZOOM

16 Friday, September 22, 2023

17 10:00 a.m. to 2:11 p.m.

18
19
20
21 Reported by:

22 Dawn Mack-Boaden

23 Registered Professional Reporter; CSR# 153120

24 APPEARING REMOTELY FROM NORFOLK COUNTY, MA

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* No exhibits were marked during the deposition.

** Original exhibits were retained by

P-R-O-C-E-E-D-I-N-G-S

HENRY HOUH, a witness first having been
satisfactorily identified, was sworn and
testified as follows:

DIRECT EXAMINATION

BY MR. GOLUB:

Q. Can you please state your full name.

A. My name is Henry Houh; and that's spelled
H-O-U-H.

Q. Do you go by Dr. Houh?

A. I do have a Ph.D. Sure.

Q. Is anybody with you today in the room?

A. No.

Q. Where are you physically located at the
moment?

A. I'm at my home in Lexington, Massachusetts.

Q. Do you have any applications on your
computer open besides this?

A. I have some files open, but I'll close them
all now.

So they're all closed. I don't have any
other tabs open.

1 Q. Do you have any physical documents in the
2 room with you?

3 A. I do.

4 Q. What do you have?

5 A. Well, I have the patent, my declaration,
6 and three of the prior art references; and,
7 actually -- I mean, there's a number of other
8 documents out of reach that are just in the room
9 unrelated to this case.

10 Q. Do you have a copy of your CV?

11 A. I don't think I do, no.

12 Q. Okay. Is there anything preventing you
13 from providing accurate answers today?

14 A. No.

15 Q. Can you tell me what you did to prepare for
16 today's deposition?

17 A. I reviewed some documents and I met with
18 attorneys.

19 Q. How long did you meet with them?

20 A. About two hours.

21 Q. Have you discussed this deposition with
22 anyone other than the counsel that's representing
23 you today?

24 A. No.

1 Q. Dr. Houh, I want to talk about your CV,
2 Exhibit 1004 in this case. Are you able to get a
3 copy of that?

4 A. I'm not sure I would get a copy that I know
5 is the one that's submitted. If you could provide
6 it in the chat, that would be great.

7 MR. GOLUB: Can we go off the record for
8 a second.

9

10 (Short recess taken in the proceedings.)

11

12 BY MR. GOLUB:

13 Q. Dr. Houh, do you have a copy of
14 Exhibit 1004 in front of you?

15 A. Yes, I do.

16 Q. What is Exhibit 1004?

17 A. This is a copy of my CV.

18 Q. Is it accurate?

19 A. It should be.

20 Q. Is this the most recent version of your CV?

21 A. Probably not, no.

22 Q. Can you tell me what you've added to your
23 CV since Exhibit 1004 was filed?

24 A. I've probably added a few more cases, and

1 I -- and I have since joined the board of the
2 Discovery Museum, which I don't see here at the
3 end -- near the end; and I joined a few more
4 orchestras which I don't see listed.

5 That's all I can think would be different
6 at the moment.

7 Q. Thank you. I'd like to talk for a second
8 about your time as an undergraduate at MIT. What
9 were your majors at MIT as an undergraduate?

10 A. I majored in physics and electrical
11 engineering and computer science.

12 Q. Within electrical engineering and computer
13 science, did you have any particular concentration?

14 A. As an undergrad, I wouldn't say
15 particularly anything.

16 Q. Did you minor in any subjects?

17 A. No, not officially.

18 Q. Same question with respect to physics. Did
19 you concentrate in any particular area of physics as
20 an undergraduate?

21 A. No.

22 Q. As an undergraduate, did you receive any
23 awards?

24 A. I believe I received a Laureate award from

1 the Tau Beta Pi organization.

2 Q. Any others?

3 A. I can't think of any offhand.

4 Q. You identify an undergraduate thesis
5 called, quote, "Boundary Element Analysis of
6 Arbitrarily Shaped Dielectric Structures," closed
7 quote.

8 And my question is was this undergraduate
9 thesis for your electrical engineering and computer
10 science degree or for the physics degree or both?

11 A. It was just done for my EECS degree.

12 Q. Did you also have an undergraduate thesis
13 for your physics degree?

14 A. No, I don't think so.

15 Q. As an undergraduate, did you take any
16 courses in business?

17 A. Not as an undergrad. As a grad student, I
18 did.

19 Q. Did you take any courses in accounting as
20 an undergraduate?

21 A. No formal courses; but I -- I know enough
22 to -- now to keep my own books and whatnot.

23 Q. As an undergraduate, did you take any
24 courses on financial payment systems?

1 A. No, not as an undergraduate.

2 Q. What did you do after you graduated with
3 your undergraduate degree in physics?

4 A. I think what came next, if I recall
5 correctly, is that I was at Bell Laboratories and I
6 was -- I spent some time as -- officially as an
7 intern at Bell Labs while I was enrolled at MIT.

8 And then I actually withdrew from MIT for I
9 think the fall -- one -- one semester and maybe a
10 summer, and I stayed to conduct research at Bell
11 Labs, after which I returned to MIT to -- I don't
12 remember if that was to continue my Ph.D. or finish
13 my master's or -- or I -- I think I finished my
14 master's thesis at -- at Bell Labs during that time,
15 and then I started my -- back at MIT.

16 Q. Why did you decide to pursue a master's
17 degree?

18 A. Well, I think sophomore year I applied for
19 a five-year master's program, which included this
20 internship at Bell Labs, and so it was -- basically,
21 I wanted to apply to this internship program because
22 it gave practical experience, and it also came along
23 with a master's in just one additional year. So I
24 think that's why I decided to get a master's.

1 Q. Was your master's thesis entitled
2 "Demonstration of a Laser Repetition Rate
3 Multiplier"?

4 A. Yes.

5 Q. What was that thesis about? Could you give
6 me a brief description of it?

7 A. Yeah; I mean, the best I can recall -- it's
8 been a long time now. I had taken a laser that
9 generated pulses at regular intervals, and I created
10 a fiberoptic structure that would multiply the rate
11 of those -- of those pulses; that could double the
12 rate, for example.

13 Q. As part of you master's program, did you
14 take any courses in business?

15 A. No.

16 Q. As part of your master's program, did you
17 take any courses on financial payment systems?

18 A. No.

19 Q. What did you do after you got your master's
20 degree in 1991?

21 A. I found a new research group at MIT to
22 join, and then I -- I joined it to continue my
23 graduate studies.

24 Q. Did you apply to any other Ph.D. programs

1 besides MIT?

2 A. No.

3 Q. It looks like you didn't get your Ph.D.
4 until 1998; is that correct?

5 A. Yes, that's right. I graduated officially
6 in February.

7 Q. Of 1998?

8 A. Of that year, yes.

9 Q. When did you start your Ph.D. program, what
10 year?

11 A. Well, probably right after I finished my
12 master's degree, 1991; yeah, right around there.

13 Q. So did you work on your Ph.D. continuously
14 from 1991 to 1998?

15 A. I mean, I was probably part of the senior
16 research group, but I wasn't spending every minute
17 of every day working on my thesis.

18 Q. Were you employed at any place other than
19 MIT during that period?

20 A. Yes.

21 Q. Where was that?

22 A. During that time, I also started my own
23 company called Agora Technology Group, and I was
24 employed there while I was doing my Ph.D. for -- I

1 don't remember how long.

2 And then before I graduated with my Ph.D.,
3 I started working part time at the job that I
4 eventually worked full time at after I graduated.

5 Q. Where was that?

6 A. It was called NBX Corporation, and, at the
7 time, it was located in Somerville, Massachusetts.
8 And then at some point they moved up to Andover,
9 Massachusetts or thereabouts.

10 Q. Was your Ph.D. thesis entitled, quote,
11 "Designing Networks for Tomorrow's Traffic," closed
12 quote?

13 A. Yes.

14 Q. Can you briefly describe what it was about?

15 A. Sure. We had built a very -- well, a
16 demonstration in high-speed, distributed computer
17 system or -- that was networked with very high-speed
18 links as part of the AURORA Gigabit Testbed funded
19 by DARPA; and what I studied eventually in there
20 was, you know, after we built up the network and had
21 distribute applications, network applications, video
22 streaming video, I focused on the efficient transfer
23 of data throughout the network to propose more
24 efficient methods for -- for routing data in a

1 network that were important for various
2 applications, including streaming video and audio
3 and other applications as they were emerging in that
4 time frame.

5 Q. As part of your Ph.D. program, did you take
6 any courses in business?

7 A. It wasn't officially part of the program,
8 but I did take at least one class at the Sloan
9 School.

10 Q. Do you recall the name of that class?

11 A. I don't recall the exact name of the class,
12 no.

13 Q. Do you recall the subject matter of the
14 class?

15 A. Yes. It was about entrepreneurship, and
16 that was what it was about.

17 Q. So I'm turning to page 4 of your CV, and
18 I'm going to go through your work experience
19 chronologically, starting from the oldest.

20 So the first work experience you have is
21 being a summer intern at AT&T Bell Laboratories; is
22 that correct?

23 A. Well, I didn't -- I didn't put the job I
24 had in high school there, but I suppose that's the

1 first technical job.

2 Q. So what was the subject matter of your
3 internships at Bell Labs in the summers of 1987 and
4 1988?

5 A. In the summer of 1987, I think I did
6 circuit design.

7 In the summer of 1988, I think I joined the
8 optical computing group. So it was research in
9 optics, fiberoptics, optical computing.

10 Q. How long were each of those internships?

11 A. Well, they were summer internships; maybe
12 ten weeks or so. I don't remember the exact length
13 of time.

14 Q. And staying with AT&T, it looks like you
15 were also there from 1989 to 1990. Was that an
16 internship as well?

17 A. It was partly. So the summer of 1989 and
18 the fall of 1989 were officially internships, and
19 then my research was very interesting and going
20 well, so I think I asked or they invited me to stay
21 longer. So I -- I converted into a regular employee
22 at that time, and I worked there until the fall of
23 1990.

24 So I basically withdrew for the spring term

1 1990 from MIT, and I told them I'd return in the
2 fall.

3 Q. And what was the subject of your research
4 at AT&T at that time?

5 A. I was working with a few Bell Labs
6 researchers on optical computing and fiberoptics and
7 optics in general, and I think one of the patents I
8 have came out from the work that I did that -- at
9 that time. It was for, effectively, optical
10 transistor.

11 Q. After AT&T, the next item above that on
12 your resume is Agora Technology.

13 Do you see that?

14 A. Yes.

15 Q. What was Agora Technology Group?

16 A. That was a company where -- which I started
17 with some friends. It was initially to do targeted
18 advertising for -- to college recruit -- students
19 and -- who were looking for jobs, you know, kind of
20 in -- in cooperation with the schools' career
21 offices to help set up and move over to the web all
22 the information that the career office had and --
23 and -- and the services they performed and then --
24 and then we'd sell advertising to recruiters.

1 That's the way it started.

2 And then eventually we -- we started
3 landing contracts to help companies set up their
4 first websites. This was at a time before companies
5 -- many companies had any websites at all. So
6 eventually that became the focus.

7 Q. About how many websites did you help set up
8 while you were at Agora Technology Group?

9 A. I don't remember exactly how many. Maybe
10 -- maybe about a dozen or so back then for that
11 work. Maybe eight -- eight to twelve, maybe.

12 Q. Do you remember the names of any of those
13 websites?

14 A. A few. We helped set up the website for
15 Bay Networks. We helped set up the website for Data
16 Communications Magazine. We helped set up the
17 website for the MIT Alumni Association.

18 And I can't really remember many more
19 beyond that offhand.

20 Q. Just let me make sure you understood my
21 question. So you answered by saying "we" did
22 certain things. And I want to find out what
23 websites you yourself helped set up.

24 Did you personally set up eight to twelve

1 websites while you were at Agora?

2 A. I -- I may not have been involved with
3 everything, but, I mean, the company did. And then
4 I -- I personally set up a number of websites during
5 that time as well that was not part of Agora.

6 Q. So how many websites did you set up that
7 were in connection with your work at Agora?

8 A. Maybe half of them; four -- four or so.

9 Q. And do you remember the names of those four
10 websites?

11 A. Yeah; I mean, those -- the three I listed I
12 did help set up personally, and -- not just me, but
13 -- but I was involved with those projects. There
14 were some other projects that I wasn't fully
15 involved in.

16 Q. What was entailed in setting up those
17 websites?

18 A. We had to install -- we had to install the
19 web server itself, the software for the web server,
20 and we had to actually convert and create all the
21 web pages, and we had to create some -- we did
22 create some specialized software during that time
23 for the websites.

24 We would set up log analysis reporting and

1 -- and things like that for the client so they could
2 get statistics about their website. And, in some
3 cases, we'd help set up scripts.

4 I don't think -- I had, during this same
5 time period, integrated -- or during this time
6 period or maybe -- maybe -- I'm not exactly sure,
7 but, you know, set up a number of different websites
8 that I also integrated online payment systems into.

9 And that was for various organizations that
10 I was involved with at the time, separate from the
11 company.

12 Q. While you were with Agora, did you set up
13 any websites that had integrated payment systems?

14 A. Not that I recall for Agora. But around
15 the same time or there -- you know, within that time
16 frame, I did set up other websites that did have
17 integrated payment systems.

18 And it's not listed here, but I did do
19 consulting at a company called OpenMarket, Inc., and
20 that was one of the early ecommerce web server
21 providers. But I didn't work on the ecommerce side.
22 I worked on -- they had bought a list from -- from
23 me that I had started and -- and took it over. And
24 so I kind of consulted on that, but I did -- I did

1 do that consulting as well. That's not on here.

2 Q. So I'm looking at your CV -- not your CV,
3 I'm sorry, your declaration in this matter,
4 Exhibit 1003, and the last sentence of Paragraph 18.
5 I wonder if you can pull that up.

6 A. Okay.

7 Q. So the last sentence says, "Starting in the
8 early 2000s, I integrated payment systems with
9 various websites."

10 A. Yes, I see that.

11 Q. What was the first website that you worked
12 on where you integrated a payment system?

13 A. I don't remember if this was the first, but
14 I think I was very heavily involved with the MIT
15 Club of Boston, and I helped move the payment from,
16 you know, mail-in checks to online payments at some
17 point during my involvement with the MIT Club of
18 Boston.

19 Q. Can you tell me what was entailed in
20 integrating the payment system into the website of
21 the MIT Club of Boston?

22 A. I think -- I think the first one we did was
23 we integrated PayPal payments. So I had to study
24 the API, figure out what workflow we wanted to use,

1 and then -- and then integrate that into the website
2 of the club so that we would accept online payments
3 and have a record of that and be able to track --
4 track it.

5 Q. Approximately, what year was that?

6 A. I don't -- I don't remember exactly.

7 Q. Do you remember whether it was before 2010?

8 A. Yeah; I'm pretty sure it was definitely
9 before 2010.

10 Q. You said that you needed to study the
11 PayPal APIs. What did that entail?

12 A. It just entailed reviewing their
13 documentation that they had, I think online, or we
14 -- we downloaded a document and reviewed it. Or I
15 did, rather, not we in that case.

16 Q. What did those PayPal APIs consist of?

17 A. Probably some fragment of code that I had
18 to integrate into the -- into the website and set it
19 up properly with an account and -- and the right
20 identifiers.

21 Q. So you wrote the code for the website that
22 spoke to PayPal's APIs; is that correct?

23 A. Yeah, I would agree with that. Well, I
24 mean, I -- I modeled the code after the samples

1 given, I think.

2 But -- but I wrote all the code for that
3 website, and -- and then I integrated it with
4 PayPal.

5 Q. When you say you integrated it with PayPal,
6 you mean you integrated the website with PayPal's
7 API?

8 A. What I mean is that -- that users who came
9 to our website could then submit payments using
10 PayPal that we would receive in our PayPal account,
11 and -- and they were tied to various events that the
12 MIT Club of Boston was putting on that -- that would
13 cost money. So like a dinner or a lecture or a trip
14 to the theatre or something like that.

15 Q. Why did you choose PayPal for that?

16 A. I guess I don't -- it was probably, like,
17 the most -- one of the common ones or the one that
18 many people used at the time, but I don't recall
19 exactly all the reasons.

20 Q. Other than the -- stepping back for a
21 second.

22 Did PayPal provide model code for
23 integrating their API with the website?

24 A. Yeah, I think they did. I think I said

1 that earlier, that, you know, you had to do specific
2 things to make sure you had the right account, that
3 we would get the money and not someone else.

4 And so whatever -- whatever the API
5 required, I -- I followed that and, you know,
6 eventually got -- you know, we did get it working.
7 Well, I did get it working. And this was really
8 just me.

9 Q. So other than the MIT Club of Boston, what
10 other website did you integrate a web payment system
11 into?

12 A. I can't remember all of them, but at least
13 in -- when I started another business -- let me see
14 here. It was around -- around 2010-ish.

15 I started a robotics and stem company, you
16 know, to teach kids -- well, we started with
17 robotics, and then we extended to pro- -- you know,
18 more programming classes and whatnot.

19 And I think that I did something when it
20 was more of an informal robotics thing, but I know
21 that I did something after that where we -- we built
22 out a whole website and integrated, you know, class
23 -- online class selection and payments into our
24 website. And I -- I did that work as well.

1 I mean, I had one other person helping me
2 with the website, generally; but in -- but in that
3 particular case, I did all the payment integration.

4 Q. Was that Einstein's Workshop that you're
5 referring to?

6 A. Yes.

7 Q. And in what year was the payment system
8 integrated into the website for Einstein's Workshop?

9 A. Well, I think I had -- was able to take
10 some payments for the robotics informal need, but
11 for the more formal website after I, you know,
12 secured the facility, I did all that work before we
13 launched in, I think, 2012.

14 Q. So in 2012, is that the time that you
15 integrated the payment system into the website for
16 Einstein's Workshop?

17 A. I think that was the time that -- that I
18 formally signed a lease and then, you know, had a
19 facility and was building a much nicer website. And
20 so I think during that time, I know that I -- I set
21 up, before we launched, a whole online presence for
22 the company, and we were taking electronic payments
23 on -- on day one for that.

24 Q. Did you personally integrate a web payment

1 system into the Einstein's Workshop website?

2 A. Yes. That was me personally.

3 Q. And what did that entail?

4 A. Again, I was -- it was using some of the
5 APIs in -- I -- I think initially we used PayPal
6 again. More than one payment system comes to mind,
7 though, during that time. So I don't remember what
8 other ones -- any other ones that come to mind.

9 But eventually I think we started on PayPal
10 and then transitioned to something else. But -- but
11 I think it was PayPal at first. And I think by
12 then, you know, PayPal had more extended
13 functionality that we leveraged, like shopping carts
14 and whatnot that we could connect in to.

15 So it was -- it was reviewing all the right
16 APIs for the integration and -- and using them on
17 our website.

18 Q. Where were you able to review the APIs?

19 A. I think it was all online at that time.

20 Q. On PayPal's website?

21 A. Yes, I think so.

22 Q. Did the information on PayPal's website
23 include model code for these APIs?

24 A. I mean, it probably did. But I think one

1 -- one had to connect it to the right account and --
2 and do the right stuff to make sure, you know, we
3 got all the right -- the money in our account.

4 So, yes, I mean, I think there was some
5 model code available.

6 Q. Other than the MIT Club of Boston website,
7 did you integrate payment systems into any other
8 website before 2012?

9 A. You know, I may have done something with
10 the MIT Enterprise Forum of Cambridge when I was
11 involved in that group, but I don't -- I don't
12 recall specifically.

13 Q. Since 2012, what websites have you
14 integrated payment systems into?

15 A. Well, I think at some point after we
16 started with PayPal, we switched over to a different
17 payment or -- or integrated payment registration
18 system on -- on -- for my company, Einstein's
19 Workshop.

20 And I was involved in at least one of -- I
21 think that we changed vendors several times, and I
22 was involved in at least one change of vendors.

23 Q. What year was that?

24 A. I don't recall when we switched vendors.

1 But, also, initially, I helped set up the entire
2 point-of-sale system for Einstein's Workshop, which
3 included remote point-of-sale systems too where we
4 could take payments from mobile devices and whatnot;
5 like if we went to a fair and someone wanted to
6 register for a class there.

7 Q. Let's talk about that in a minute.

8 You mentioned that at one point you
9 switched vendors. Do you recall saying that?

10 A. Yes.

11 Q. Can you tell me the reason for the switch?

12 A. Yeah, I mean, one of the reasons was that,
13 you know, it was all a home-built code at that time
14 to track all the registrations. We might have used
15 some modules we found; but, like, we kind of had to
16 integrate everything, and it just had become a
17 burden to maintain.

18 And so I don't -- I think there were at
19 least two switches, and eventually we ended up with
20 an integrated Camp payment and registration system,
21 but I think there was something intermediate. I
22 just don't recall what it was at this point.

23 Q. When you say you changed vendors, do you
24 mean you changed vendors for the payment system?

1 A. Well, that -- it would have included the
2 payment system, yes, because then you stop getting
3 -- we -- our payments through PayPal went down and
4 -- and -- at some point we switched over.

5 So exclusively we were using this system
6 called CampBrain, which all the payments came -- all
7 the registrations and all the payments came through
8 there.

9 But there was this intermediate system I
10 can't recall now that -- we had some PayPal and some
11 through another system and -- while -- during the
12 transition. Again, I don't remember -- takes --
13 what -- how big of an extent we used an outside
14 vendor for that. I just -- I just can't recall
15 right now.

16 Q. Was CampBrain software that you wrote
17 internally at Einstein's Workshop or was that an
18 outside vendor?

19 A. That was an outside vendor. We didn't
20 write that. But we had to integrate it with the
21 website.

22 Q. Did CampBrain provide model code in
23 connection with that integration?

24 A. I mean, probably some.

1 Q. And, again, do you recall what year that
2 took place?

3 A. I can't recall the exact year. Probably,
4 at the earliest, mid 2010s. Maybe a little later
5 than that.

6 Q. When you say mid 2010s, do you mean 2015?

7 A. Yeah, around there or later. I don't
8 remember exactly when. It was pre-COVID for sure,
9 but I don't remember when.

10 Q. I'd like to go to the next paragraph of
11 your declaration, Paragraph 19, and the second
12 sentence of it says, "I also evaluated, sourced, and
13 configured the point-of-sale system for the
14 company."

15 What point-of-sale systems did you evaluate
16 for the company?

17 A. I mean, I don't remember all of them. But
18 the one -- I remember I looked at one that was on --
19 Mac-based. I don't remember the name of it at this
20 point, and I -- I did some research online, and
21 eventually what we ended up with was QuickBooks
22 point of sale.

23 Q. When did you choose QuickBooks point of
24 sale?

1 A. I think that was some time in 2012.

2 Q. And did you need to configure QuickBooks
3 point of sale for the company?

4 A. Yes. I did all that myself personally.

5 Q. What did that entail?

6 A. That entailed actually integrating it with
7 QuickBooks itself. But it also entailed setting up
8 all the stock keeping units, figuring out what other
9 point-of-sale equipment we should buy, like the --
10 you know, the scanners and, you know, receipt
11 printers and getting all that stuff and setting it
12 up and making sure it worked right, testing it and
13 just getting the whole system to work.

14 Oh, and also setting up the mobile --
15 mobile point-of-sale systems to that that came along
16 with that.

17 Q. Are the mobile point-of-sale systems that
18 you're referring to part of QuickBooks?

19 A. Well, I mean, there's two separate things
20 here. One is QuickBooks, the accounting package;
21 and the other is QuickBooks point of sale, which I
22 consider a separate program because they were
23 separately licensed.

24 QuickBooks point of sale had a feature to

1 integrate credit card scanning on mobile phones, but
2 you also wouldn't have all the inventory available
3 on the -- available to the mobile phone devices.
4 You'd only have some of the inventory.

5 So it also involved, like, knowing, you
6 know, how to configure what inventory was available
7 to the mobile point-of-sale systems.

8 Q. Did the QuickBooks point-of-sale program
9 provide some code that was used to do the
10 integration?

11 A. I wouldn't -- I wouldn't call it that. We
12 didn't integrate, like, in terms of -- I mean, we
13 just used the interfaces to set up -- I used the
14 interfaces to set up everything.

15 So, you know, if you had to enter, like,
16 inventory -- you know, we have taxable inventory and
17 nontaxable inventory, for example. Like, a class is
18 not taxable, but merchandise was. So we had to
19 input all that as well as the program itself as we
20 were setting up all the inventory.

21 Q. I think I'm still confused. You mentioned
22 a minute ago that you configured mobile systems that
23 could take credit card payments; correct?

24 A. Yes.

1 Q. Were those credit card payments handled
2 through the QuickBooks point-of-sale program?

3 A. Yes, they were. Yeah. I -- so I had to
4 integrate all the credit card processing as -- along
5 with all that too. So -- but, yeah, so if you made
6 a sale and swiped the card on a mobile device, it
7 would eventually update -- well, I think it would
8 update to our account at -- it was the same account
9 that our -- our desktop point-of-sale system ran on,
10 and all the payments and records would be kept in
11 our main point-of-sale system.

12 But it allowed you to take, you know, a
13 phone with you somewhere and make some sales, you
14 know. And -- and we did that on occasion.

15 Q. When you used your phone on those occasions
16 to make a sale, was the payment processed in
17 realtime or was it just recorded and then when you
18 got back to your desktop, it was processed at that
19 time?

20 MR. BOWSER: Objection to form.

21 THE WITNESS: I think that it was
22 processed in realtime.

23 BY MR. GOLUB:

24 Q. And was that processing done by the

1 QuickBooks point-of-sale system?

2 A. I'm not sure on the back end how -- how it
3 got processed, but it was processed through the same
4 credit card vendor we had connected our
5 point-of-sale system to. Yeah.

6 QuickBooks point-of-sale system would allow
7 you to integrate with various different credit card
8 processors is my understanding.

9 Q. Who was the credit card processor that you
10 used for those mobile point-of-sale systems?

11 A. I think we used the -- I think QuickBooks
12 had their own process or -- or a preferred
13 processor, and we used that.

14 Q. Do you have an understanding of what a
15 credit card processor is?

16 A. Well, I mean, from -- from running a
17 business point of view, but I -- that -- that would
18 be the point of view that I would understand that
19 service.

20 Q. What did the QuickBooks credit card
21 processor do as a service?

22 A. Well, we could run credit cards through our
23 system and they would make, I think, daily deposits
24 based on our -- our transactions or make, sometimes,

1 I think, multiple times daily.

2 And then -- and then we could go online and
3 generate reports and look at the, you know, itemized
4 transactions and fees associated with them and
5 things like that, and, you know, see -- you know,
6 from the business sense, we would be able to see all
7 the expenses associated with using an online -- you
8 know, the credit card processor.

9 And they weren't only transaction fees. I
10 don't know if people realize this, but when people
11 use rewards cards, we would get charged -- at least
12 this credit card vendor charged us for the rewards,
13 basically.

14 So -- so it's all the fees associated with
15 that: The base fee, the rewards fee, monthly fees,
16 transactions fees, all that. And we would be able
17 to see reports of all that.

18 And as well as them basically giving us --
19 giving us money, you know, the same day we ran a
20 credit -- or, you know, within a day, probably, of
21 when we ran a credit card.

22 Q. Dr. Houh, other than what you've talked
23 about so far this morning, are there other
24 point-of-sale systems that you configured for

1 Einstein's Workshop?

2 A. No. I mean, we stuck with that one system
3 through -- throughout the entire time I owned it,
4 which -- which -- I'm not sure if the sale is in my
5 CV because -- but I sold it late last year.

6 Q. You sold Einstein's Workshop late last
7 year?

8 A. Well, I sold all the assets and the -- and
9 everything needed to run Einstein's Workshop.

10 I don't -- I didn't actually sell the
11 corporation H3XL that -- that did business as
12 Einstein's, but I sold everything needed to run the
13 business to -- yeah.

14 Q. Who did you sell it to?

15 A. I sold it to a woman named Rebecca
16 Rappaport.

17 Q. And what year was that?

18 A. I sold it last year. 2022.

19 Q. If you were updating your CV now for
20 Einstein's Workshop, would it read 2009 to 2022?

21 A. Yeah. And maybe I forgot about that change
22 as well. But that -- it would -- it would -- it
23 should. But I think this CV was submitted last
24 year. I -- it -- I probably should have made that

1 change here, but I did sell it late last year.

2 Q. How would you feel about taking a
3 five-minute break? We've been going about an hour.

4 A. Sure. Great.

5
6 (Break from 10:52 a.m. to 11:00 a.m. was
7 taken in the proceedings.)
8

9 BY MR. GOLUB:

10 Q. Dr. Houh, I want to go back to page 4 of
11 your CV and the section entitled "MIT Department of
12 Electrical Engineering and Computer Science."

13 A. Okay.

14 Q. Under that section, the second bullet from
15 the bottom says in 1987 you were a laboratory
16 teaching assistant for Computational Structures.

17 What was Computational Structures?

18 A. That was the -- a computer -- intro
19 computer architecture class. It was -- the number
20 of the -- all the classes at MIT have numbers. So
21 it was 6004.

22 So there would be three classes that people
23 would take before getting a 6004. So there would
24 be, you know, 6001, 6002, 6003, and then 6004.

1 Q. And then from 1988 to 1989, you were a head
2 laboratory teaching assistant for Computational
3 Structures.

4 Do you see that?

5 A. Yes.

6 Q. So what kind of lab assignments would you
7 have been involved in in that position?

8 A. They were lab assignments with respect to
9 building and programing a basic computer from,
10 really, mostly discreet computer chips.

11 Q. And what did maintaining a lab entail?

12 A. Making sure everything in the lab was
13 working, just keeping it in good general order,
14 things like that.

15 Q. And in the next bullet up is -- regards to
16 three time periods -- the spring of '89, fall of
17 1990, and the spring of 1995 -- you were a teaching
18 assistant again in connection with the Computational
19 Structures course.

20 Do I have that correct?

21 A. Yes.

22 Q. And then from 1991 to 1998, you are
23 identified as being a research assistant at MIT.

24 Do you see that?

1 A. Yes.

2 Q. And you were a research assistant in the
3 Telemedia Network Systems Group; is that correct?

4 A. Yes.

5 Q. What was the Telemedia Network Systems
6 Group?

7 A. That was a group of -- formed by my
8 professor who -- and that group consisted of him and
9 a number of graduate students and some undergraduate
10 students all working on the various research that he
11 guided.

12 Q. Can you describe, generally, what that
13 research entailed?

14 A. There were a number of different things.
15 Earlier I talked about this AURORA Gigabit Testbed
16 and the project we were working on to build a
17 high-speed network. We -- we did all that as well
18 as all the software.

19 So he was very interested in -- in the
20 computer link into with -- with digital -- digitized
21 resources. So, at the time, there weren't really
22 many systems to digitize video. So as part of our
23 group, we built -- not me, but my office mate, he
24 designed and built a digital video capture device

1 that plugged into the network.

2 I helped design some of the network
3 components, like the switches and links, the
4 computer interfaces, and I wrote some software for
5 those as well.

6 And then other people in the group did --
7 wrote -- designed and wrote a system for processing
8 video that could be easily manipulated and -- and
9 you could create all sorts of different video
10 applications in.

11 So, for example, this is in the
12 early-to-mid '90s we started this project, and by
13 the mid '90s, we had -- we had actually put our
14 video demos on the web. I think it was probably the
15 first video available over the web.

16 I had set up a website for our group, which
17 could very possibly have been the -- one of the
18 first 100 websites -- if not 100, the first couple
19 hundred -- and -- and -- I mean, I did that
20 personally, and then the whole research report got
21 -- put our demos online.

22 And then the -- the kind of video
23 processing modules that we had been doing back then
24 were, for example, like, automatic green screen.

1 It's kind of like the filters you might see in Snap
2 Chat today. They can figure out, you know, and put
3 like, hats, on you or glasses. We didn't do those
4 specific apps, but that was the kind of processing
5 that, actually, I think two people in the group
6 wrote their Ph.D. thesis on. That -- that, you
7 know, you have video in the computer, what could you
8 do.

9 And we had a number of different sample
10 apps with green screening. We had a -- what we
11 called the Puzzle App, which is -- I don't know if
12 you know the old kids toy, like a three-by-three
13 grid with one square missing, you can slide them all
14 around, you know, to get the picture to look right.
15 We did the video version of that. So -- so that was
16 one module.

17 An undergrad in the group won and undergrad
18 thesis prize for his work on what we call the Joke
19 Browser. And the Joke Browser was -- you know, we
20 would also record video off satellite feeds every
21 night. So we recorded the Jay Leno and David
22 Letterman monologues, and he'd take those and he'd
23 break them up into jokes, individual jokes, and then
24 you could search through jokes that -- the caption

1 information for the jokes to see if you could find
2 jokes about -- back then, it was Bill Clinton, for
3 example. And so you could return a sub -- like a
4 playlist of all the Bill Clinton jokes across, you
5 know, one or more of the monologues.

6 And so those were the kind of apps that we
7 did, but it was all enabled by the underlying, you
8 know, high-spiced network system that we built from
9 scratch. And I did contribute a little to the
10 software, but there were -- there were a lot of
11 people -- well, there were about five -- five Ph.D.
12 students in the group. I was one of them. And then
13 we had a number of master's students and a number of
14 undergrads.

15 And so that was the work of our group in
16 the Telemedia Network Systems Group primarily, and
17 -- and -- and one -- one of the -- one of the Ph.D.
18 students eventually took a variation on that and --
19 but it's the same kind of approach. What can you do
20 if you had computer processing -- so he -- his
21 thesis was about software radios, and he went on to
22 found a company on software radios that were
23 low-cost mobile-based stations for world
24 environments.

1 Q. Under the same bullet, it says that you
2 studied post interface design issues?

3 A. Yeah.

4 Q. What did that entail?

5 A. Well, that entailed trying to figure out
6 the -- an efficient way of getting data from the
7 network into the CPU. And so there were a number of
8 different issues around that.

9 And I wrote and submitted a couple of
10 papers to conferences and -- but that was one of the
11 -- one of the projects I had was building the
12 hosting, designing it, and writing all the software.
13 So -- and then revising that I think one time.

14 Q. So you said that host interface was about
15 getting information into the CPU?

16 A. It was transferring data from a network
17 into the computer or computer memory, which
18 eventually the CPU would use.

19 But you also wanted to get data to a place
20 that was sufficient for the CPU to access. That was
21 part of it.

22 Q. So it was an interface between the network
23 and the computer?

24 A. Yes.

1 Q. While you were at MIT, you're the author of
2 a number of papers; correct?

3 A. Or coauthor. Author or coauthor.

4 Q. The last one of those papers looks like
5 it's dated from 1996. Do I have that right?

6 A. Yeah; that -- that looks right based on the
7 list on page 9 and 10.

8 Q. Have you published any papers since 1996?

9 A. Not -- not really in any journals or
10 conferences.

11 Q. So what was the first job that you had
12 after you got your Ph.D.?

13 A. Well, it was a job that I started while I
14 was getting my Ph.D. at NBX Corporation. That's
15 listed somewhere. It's at the bottom of page 3.

16 I started in the fall of 1997 for a time,
17 which was about a semester before -- it was the last
18 semester I was doing my Ph.D. work. And -- and then
19 I joined full time after I finished my Ph.D. in
20 February of '98.

21 Q. Looking at page 4 of your CV at the top, it
22 says that you were a senior scientist and engineer
23 at NBX, and you worked in IP telephony. Is that
24 correct?

1 A. That -- that is what NBX was doing at the
2 time. We built the first business phone system that
3 ran over a company's data network instead of
4 separate telephone lines.

5 Q. So it says that you architected a
6 next-generation product. What was the
7 next-generation product that you architected?

8 A. So our system was designed for kind of
9 small businesses, you know, on the order -- I don't
10 remember the maximums -- on the order of 100 or 200
11 phones, but the next-generation system was more of a
12 medium-to-large enterprise product which would
13 support thousands or more phones.

14 Q. And that was an IP Telephony product?

15 A. Yes.

16 Q. And then going to the previous page, page 3
17 of your CV, it says that in 1999, you became
18 Software Engineer 5. Can you explain what that is?

19 A. Yeah. So NBX was a small company, a
20 startup. So I think at that company I was senior
21 scientist and engineer. But 3Com had more formal
22 designations for the levels of programmers and
23 various job descriptions.

24 I think Software Engineer 5 was the highest

1 level of software engineer they had at 3Com. So
2 that's what they assigned me to when 3Com bought us.

3 Q. As a Software Engineer 5, were you still
4 focused on IP telephony?

5 A. Yeah; I was still involved in the same
6 work, but now we were -- I kind of was the lead for
7 integration with -- with 3Com's other products and
8 -- and working with other people within the broader
9 3Com as a whole now to kind of talk about, you know,
10 the technology we had and, you know, whether it
11 would be -- like, how -- how we might integrate it
12 and whatnot.

13 So I did -- did, during that time, I think
14 work with the cable group at -- at 3Com to get the
15 system working over a cable infrastructure plan,
16 like cable -- cable TV or data -- the data over
17 cable, like Dotx systems.

18 Q. What did you do after you left 3Com?

19 A. I joined a company called Teradyne at the
20 time.

21 Q. Why did you decide to make the switch?

22 A. 3Com was kind of too big and inefficient of
23 a company, and they were scared of Cisco and
24 that's -- it was pretty clear that they were just,

1 you know, also behind Cisco in terms of everything
2 they wanted to do.

3 So it -- it just wasn't as -- what -- it
4 didn't feel like a startup anymore, and I had a
5 friend who was at Teradyne in the role of director
6 of business development. He was leaving for another
7 job to move out west to California, and he kind of
8 recruited me into taking over his job.

9 So I took -- I felt it was a good time to
10 move because I was not as happy at 3Com, and this
11 sounded like a great opportunity.

12 Q. It says here that you were director of
13 business development for software test units; is
14 that correct?

15 A. Yes.

16 Q. What were the software test units about?

17 A. So Teradyne was a semiconductor test
18 company, and they made big equipment to test, like,
19 memory chips and things like that.

20 But the chairman saw the rise in -- in
21 software systems and he -- he started buying little
22 companies that were focused on testing software. So
23 he bought a number of these companies and they
24 became each of these software test units.

1 So one of them was a company called Hammer
2 Technologies, which made hardware and software to
3 test telecommunication systems.

4 One of them was called -- at the time was
5 called RSW, which was a company that was testing
6 websites.

7 There was another one called Midnight
8 Networks. That was a company that was testing modem
9 banks and protocols.

10 I think there were two other ones. I don't
11 remember their names now or -- or what they did.

12 Eventually Teradyne rolled up all those
13 software test units into a separate company called
14 Empirix and spun them out as a -- as a separately --
15 raise some money from venture capitalists to spin
16 out that company.

17 But -- but those are the -- at the moment,
18 those are -- there were -- there was -- oh, there
19 was -- there was another company to test malware,
20 systems like Enterprise Java. I don't know what
21 that effort was called. And I think there was one
22 other, but I can't -- at least one other. I don't
23 know what it did now.

24 Q. You mentioned testing of websites; correct?

1 A. Yes.

2 Q. What were the websites being tested for?

3 A. So it was mostly functional and load
4 testing. So did the website perform the functions
5 that you think it performs?

6 Like, for example, one of the customers of
7 -- it may not have been a customer at the time that
8 I joined but eventually became a customer, was,
9 like, H&R Block, I think. At least one of the tax
10 companies. Right?

11 So they had a website where you could fill
12 out your taxes online. And -- and did it actually
13 do all the calculations correctly? Did you get the
14 right web pages that -- you know, did you get
15 errors? Did you -- did you get -- were the results
16 of the calculations what you expected? So that's --
17 that's functional testing. Does the website do what
18 you -- what you designed it to do and what you think
19 it does?

20 And then there's load testing, which is,
21 okay, now that we have established that it does the
22 functions correctly, can it handle 5,000 concurrent
23 users, 10,000 concurrent users? You know, the day
24 before taxes are due, can you handle 50,000 users

1 who are doing their taxes at the last minute?

2 So we -- we built the software to -- to --
3 both to enable the functional testing and the load
4 testing, and you could load up the -- the website
5 with, you know, thousands or tens of thousands of
6 virtual users.

7 Q. At 2000 you become an engineering manager
8 at Empirix; is that correct?

9 A. Yes.

10 Q. And you're working for the communications
11 infrastructure test group from 2000 to 2001 as an
12 engineering manager?

13 A. Yes.

14 Q. And, at that point, Empirix is marketing
15 the software test units that you've described so
16 far?

17 A. At this time, I think we had already spun
18 out from -- from Teradyne. And I -- you know, the
19 venture capitalists wanted to see, you know, growth.
20 And -- and so I came up with a new product idea
21 while I was -- while I was director of business
22 development.

23 And they said, well, you know, here's some
24 money, can you go build it. And then I took over

1 the project as the engineering manager for it to
2 help build what I kind of conceived in my prior
3 role.

4 Q. What was that product that you conceived?

5 A. It was called a Packet Sphere, and it was a
6 network test platform that was programmable to -- to
7 -- so you could load the software and have a
8 different -- different set of network tests to -- or
9 a different application even. So -- so that was --
10 that was the platform.

11 Q. Why did you decide to leave Empirix?

12 A. I think Empirix had -- let's see. The
13 former CEO had left for some reason. I don't
14 remember if the board transitioned him out, and then
15 I think the CFO took on the role of acting CEO and
16 then became CEO and -- and he basically moved me
17 out.

18 He basically -- they laid me off as part of
19 that transition. So I -- I didn't make the decision
20 myself.

21 Q. After that, is that when you did the
22 entrepreneur in residence at Commonwealth Capital?

23 A. Yes.

24 Q. Can you tell me what you did there?

1 A. Yeah. So the founder of NBX was -- was
2 then, at that time, a venture capitalist at
3 Commonwealth Capital. So I -- you know, when I got
4 laid off, I reached out to my network, and he was
5 one of the first people I contacted because he's
6 always doing interesting things, and he pulled me in
7 as an EIR to -- to Commonwealth Capital.

8 And we worked together, like, trying to
9 come up with a new company that we would start
10 together and then he would become, you know, the CEO
11 of and I would be the technical guy.

12 So we went through a number of -- you know,
13 we looked at a number of ideas. I was brainstorming
14 ideas for new companies. So that -- that's what
15 that involved.

16 Q. So, at that time, is BBN a portfolio
17 company of Commonwealth Capital?

18 A. I mean, it -- it was about to become one.
19 So in that kind of -- BBN was an age-old R&D company
20 that helped develop the internet, had the very first
21 contract for building what was then called the
22 ARPANET, and it built the very first router. It
23 sent the first computer-to-computer email based on
24 software they wrote.

1 So BBN did all that and -- and had become
2 part of Verizon through some long chain of
3 acquisitions somehow. BBN had then later -- before
4 its acquisition where Verizon had built out the big
5 internet service provider or backbone data provider
6 and they got acquired -- and Verizon eventually
7 acquired the business, I think, for the internet
8 side there, but BBN still had a -- you know, a
9 medium-sized R&D -- R&D business.

10 And so Verizon spun out that business into
11 a stand-alone company and the venture capitalists
12 who kind of helped fund, you know, invest in that
13 spinout, they had the idea that, you know, they --
14 they knew BBN and its long storied history and then
15 had idea, well, BBN must have great technology that
16 they can commercialize and -- but the problem is
17 that researchers don't really know how to
18 commercialize things.

19 So this was a company that Commonwealth
20 Capital was looking at investing in, and -- and --
21 but these -- including, I think, General Catalyst.
22 It was really the -- one of the partners at General
23 Catalyst that -- that was most excited about
24 spinning out BBN and being part of that because he'd

1 known the whole story of BBN and, you know, the
2 internet and a lot of great R&D, including huge
3 speech recognition AI program that was already in
4 existence at BBN for decades when -- when I joined.

5 And so they had the idea, well, we can use
6 BBN to -- to spin out startup companies, and let's
7 get -- and Alex, he's a VC and entrepreneur, and --
8 and I was working with him at the time, you know,
9 and it was really Alex can figure out how to, you
10 know, to manage, you know, looking for technology,
11 and I'd help with that and -- in building little
12 businesses, and I helped on the technology side of
13 all those and I wrote a number of business plans as
14 well.

15 And then -- and then we can spin out these
16 companies from the technology that was developed at
17 BBN. And we did that, rather I think, successfully,
18 on a number of different businesses during -- during
19 our time at BBN.

20 So Alex became head of the delta division
21 of -- of BBN, and I was vice president of technology
22 at BBN kind of working directly for Alex.

23 Eventually Alex brought -- Alex brought in
24 another guy we had worked with at NBX that could be

1 technology and an internal person. So there are
2 three of us working on these startup spin-out
3 efforts.

4 Q. In 2004, you become the director of
5 technology for the delta division at BBN; right?

6 A. Yeah. I mean, I started as director of
7 technology and later became VP of technology, yeah.

8 And during that time, by the way, I mean, I
9 -- we have a bunch of business ideas. I wrote up a
10 whole business plan, including all the financial
11 modeling, and we'd submit those to the executive
12 committee and -- and they decide what to invest in.

13 Q. It says here that you wrote three business
14 plans while in that role; is that correct?

15 A. Yeah, that's what it says there.

16 Q. Is it true that you did three business
17 plans?

18 A. I think so, yeah. I mean, yeah.

19 Q. What was the first business plan?

20 A. So one of the business plans was for a
21 company called PodSinger that we did spin out and
22 raise money for, and that was a -- a video -- so we
23 -- we took BBN's speech recognition technology,
24 which, at the time, was the world's leading, you

1 know -- based on, you know, a bake offs that they --
2 that the government had run. It was -- it was the
3 leading large-vocabulary speaker-independent speech
4 recognition system.

5 So we looked at potential applications and
6 we built a video-audio search engine using that
7 technology and that -- and we built it into a
8 separate company called PodSinger, which was spun
9 out and -- and Alex raised a bunch of extra money
10 from venture capitalists for that spin-on effort.
11 And that was -- that was one of the ones I wrote.

12 Another one that I wrote was for -- BBN had
13 an internal service they were using -- again, their
14 speech recognition technology -- for -- to gauge the
15 quality of interactions with call centers. And they
16 had this internal technology. It was some
17 consultants who just worked with companies.

18 So I -- I wrote a plan to turn that into a
19 Software as a Service so that -- and we built a
20 whole website for it. Like, all the calls would --
21 would end up, you know, being posted to the website;
22 whereas, before, they were just not as easily
23 accessible for the client to search and -- and
24 get -- you know, kind of filter for the calls

1 themselves.

2 We built a whole system where all the calls
3 -- all the audio would end up, you know, being
4 available on the website and with filtering and
5 searching and -- and notifications about errors and
6 things like that of calls. And we turned that into
7 a separate business which was run internally. I'm
8 not sure where it is today.

9 But -- but we -- we added a number of big
10 customers after we turned it into a Software as a
11 Service. That was called, I think, Avoke,
12 A-V-O-K-E.

13 Q. Was there a third business plan?

14 A. Yeah. I wrote a business plan about -- so
15 BBN had done, also, a lot of research in the
16 semantic -- semantic web and -- and semantic
17 databases and -- and I had the idea to apply that to
18 resume search to build kind of like a resume posting
19 service where you could -- you could -- it would be
20 better at understanding what's in resumes and
21 finding matches; you know, the people that are like
22 this, you know, I want -- can you help me find that
23 -- based on the semantics of what's in the resume,
24 not just the key words and key word search.

1 So that -- that was another one. That --
2 that didn't get funded.

3 Q. So in 2007, do you transition from director
4 of technology to vice president of technology at the
5 delta division?

6 A. I mean, that must be when I got a new
7 title. I don't think my job responsibilities were
8 much different; but, yeah.

9 Q. It says that you grew the Boomerang
10 counter-sniper product engineering team. What was
11 the Boomerang counter-sniper project?

12 A. Boomerang was an old research project that
13 BBN had done maybe a decade earlier before I got
14 there. And what it -- what it -- it was kind of a
15 research project, and they maybe had a prototype
16 that -- with an array of microphones, that if a gun
17 -- a bullet went somewhere in the vicinity of the
18 array, the -- based on those signals, you could
19 calculate where the bullet was fired from. The
20 direction, range, and elevation.

21 And about the time -- or, actually, before
22 I got to BBN, DARPA had come back to BBN and said do
23 you remember that project, you know, can you build
24 50 of these by Thanksgiving? And I remember that

1 day because apparently what they did was they did
2 build 50 of them, but they used researchers working
3 over Thanksgiving weekend to assemble them to make
4 them deliverable.

5 And then I joined and they had -- they
6 found an order for, I think, 250 more units, but we
7 had to redesign the casings, you know. It was -- it
8 kind of -- we picked different components to go into
9 their, you know, design. There were these masts
10 that mounted on a Humvee; we had to redesign those.
11 There were -- there were some bugs that I eventually
12 caught in some of the manufacturing documents.

13 But -- but -- so I joined during this
14 effort to try to make these 250 units, and there
15 were no -- there were no regular staff ongoing at
16 the time. They were all, like, borrowed people
17 because BBN, as an R&D organization, wouldn't put
18 people on un-billable projects, which Boomerang was
19 an un-billable project. So they would only take
20 people who were not billable at the time and throw
21 them on whatever project they needed, but they would
22 take them away as soon as they became billable
23 again.

24 So I think what I did was I hired an

1 engineer or two and an engineering manager to
2 replace me. And it was a guy that I had previously
3 worked with at NBX. We pulled him in. He became
4 the new engineering manager.

5 But during that time, I did, you know, help
6 get the -- the deliverable for 250 units out the
7 door on time and -- and helped build the base for
8 the -- for the Boomerang project.

9 And I actually pulled in a sales guy that I
10 worked with in Empirix, and he -- he had a partner
11 and they -- they were the sales team for a number of
12 years, including after I left. And we'd sold
13 eventually tens of thousands of these things, and
14 they were mounted on Humvees in Iraq and
15 Afghanistan.

16 And, you know, when the Humvee are driving
17 at 40 miles an hour and are being shot at, they
18 don't even know they're being shot at because it's
19 just too loud. So they'd get back to base and see
20 dings in the paint and they'd say, Oh, well, I guess
21 we were shot.

22 But if you had a Boomerang in the convoy,
23 the Boomerang would actually activate and say, you
24 know, shots fired, you know, range -- you know,

1 3 o'clock; range, 1,000 yards; elevation, you know,
2 whatever. And -- and they would actually go and
3 some -- some, you know, sergeant or something would
4 go -- surround that building and they'd catch
5 snipers coming out of the building.

6 And so this thing eventually came known to
7 the -- to the enemy as the Death Octopus because if
8 you shot at it, you were probably going to get
9 captured or killed.

10 So, you know, I -- I don't mean that
11 lightly. I'm just -- it's -- you know, I'm actually
12 pretty proud after that project that I had a role in
13 it. It's one of the, you know, professionally most
14 rewarding projects I've worked on.

15 Q. Dr. Houh, at some point while you're vice
16 president of technology at the delta division, you
17 get involved in a social networking website; is that
18 right?

19 A. Yes.

20 Q. How did that come about?

21 A. It was one of these other -- one of these
22 things I had an idea of. So BBN also had a bunch of
23 natural language processing-type software, which,
24 you know, would be better at understanding things

1 that people wrote.

2 And so I had the idea, well, how could we
3 apply that. And social networks were kind of new at
4 that time. Facebook wasn't even open to people like
5 the general public. It was only open to
6 universities.

7 And so I had the idea, well, let's build a
8 social network and based on what people posted on
9 it, you can understand what they're posting and --
10 and run better ads, for example. So it was a fun
11 project that I came up with and we -- we got it
12 funded and I -- I built the prototype and ran beta
13 testing.

14 And based on that, this other company which
15 I think was also in General Catalyst's portfolio,
16 yeah, we sold that project to this other company
17 called Eons, and I became the CEO -- I left BBN to
18 become the CEO and kind of go with that project.

19 Q. Was the social networking website directed
20 to any particular community or demographic?

21 A. At the -- at the time I started, it was
22 called -- we called it Groupof, and there was a joke
23 that we were one letter off from being a unicorn,
24 which was Groupon.

1 But, you know, Groupof was a social network
2 with, you know, posts and -- and photos and things
3 like -- and things like that, just like Facebook
4 had.

5 But the idea, instead of, like, everyone in
6 your whole friend list seeing stuff, you would
7 organize the whole social network around groups.
8 Like, this is the group from this high school. This
9 is the group from this class. And you would become
10 part of these groups and what you shared with the
11 group would stay only within the group. And so you
12 weren't sharing, you know, your high school photos
13 with your work friends.

14 So -- so we had kind of built in privacy
15 and -- and that was -- I mean, it turns out no one
16 really cared about privacy that much, I think, in
17 the end. But Eons did buy it and -- and we rolled
18 it out there and kind of integrated some of the
19 features into the Eons website.

20 Q. While you're at the delta division as the
21 vice president of technology, do you get involved in
22 a patent infringement lawsuit?

23 A. Yes.

24 Q. What was the technology in that patent

1 infringement suit?

2 A. The technology was Voice over IP.

3 Q. And who were the parties in that patent
4 infringement suit?

5 A. The parties were Verizon was suing Vonage.

6 Q. So how was BBN involved in that?

7 A. So BBN used to be part of Verizon, as you
8 recall. And so when Verizon -- before they
9 initiated the suit, before they filed the suit, they
10 were looking for experts who knew about Voice over
11 IP. And so they called the general counsel and
12 because, you know, BBN has hundreds of researchers,
13 surely someone must be working in Voice over IP.

14 It turned out Alex and I had -- had
15 joined -- and I don't remember at what point this
16 was; but they knew that we had been -- you know,
17 Alex is part of this Voice over IP company; I had
18 joined it and I was the technology guy there. So
19 they said, Oh, go talk to Alex. And Alex said,
20 Well, go talk to Henry.

21 So I met the attorney -- one of the
22 attorneys at the -- one of Verizon's attorneys, and
23 they said we want you to come on the case, and
24 it's -- I don't remember how many -- five patents,

1 you know, a whole bunch of claims, and they said,
2 well, can you find some other people to help on it.

3 So I found some other people within BBN. I
4 put together the team. And then I -- I was one of
5 the expert witness and -- as were two of the other
6 people on the team, and there were at least three
7 other -- two or three other supporting people on the
8 project. So I kind of put that whole team together
9 for Verizon, and Verizon actually won that lawsuit.

10 Q. So in connection with that work, were you
11 still an employee of the delta division?

12 A. Yes, I was. So I was -- I was doing the
13 work, including -- including all my other duties as
14 -- as part of the delta division.

15 Q. At some point, you leave BBN to join Eons;
16 is that correct?

17 A. Yes, that's right. That was because Eons
18 bought the project, the social networking project, I
19 was working on.

20 Q. And how long did you stay at Eons?

21 A. Not very long. Probably maybe around half
22 a year.

23 Q. And during that time, what happened to the
24 social networking website?

1 A. Well, we didn't keep the original website.
2 We folded a lot of the features into Eons' website.

3 Q. And what was Eons' website about?

4 A. Eons was a social network website but
5 targeted at -- at kind of people that were 55 and
6 up. So I think initially you couldn't even join the
7 website if we weren't 55.

8 Q. And why did you leave Eons?

9 A. So the president of the company who used to
10 be at -- at general -- at General Catalyst, he was
11 well regarded and I was working for him when I
12 joined and -- and then he -- he left.

13 And then the -- one of the founders who --
14 who took -- kind of took over things -- well, the
15 founder, I guess. He was the only -- I think he was
16 the only founder. And we didn't get along. So,
17 eventually, they basically got rid of me. That's
18 what happened.

19 Q. At that point, do you start the Einstein's
20 Workshop?

21 A. I did after that. I -- I don't remember
22 the exact timing, but I -- I -- it was definitely
23 after that that I had a lot of time and I was
24 looking for things to do and I thought that would be

1 a great thing to do. I may have already started
2 working on the robotics program with my son.

3 I don't remember the exact timing. And
4 that was growing and it seemed like a -- you know,
5 it seemed like a good thing to do.

6 Q. Did you cofound -- did you cofound the
7 Einstein's Workshop with others?

8 A. I mean, I had some various business
9 partners, one of them who was helping me on the
10 informal program, but he couldn't leave his job and
11 -- and work on this.

12 And then another woman who came along --
13 and she did help me. I mean, maybe we're
14 cofounders. I -- I guess you could call it that.

15 Q. And what was your role at Einstein's
16 Workshop while you were there?

17 A. I was the president. I was there every day
18 kind of running things, helping to hire people.

19 Initially I managed all the books on my
20 own, and then eventually I hired a bookkeeper and
21 then a CPA. But I set up the -- I set up all the
22 systems, really, the -- all the networking, all the
23 point-of-sale system, all the accounting system. I
24 basically set all that stuff up and got things

1 running and kind of set up the kind of processes we
2 used.

3 I helped develop some of the classes. I
4 hired instructors, mentors. I mean, I did pretty
5 much everything. I think for -- for the years I was
6 there, I did basically everything every day,
7 including weekends, because that's when the kids
8 were there.

9 Q. Does Einstein's Workshop at some point get
10 a DARPA grant?

11 A. Yes, we did.

12 Q. What was that grant for?

13 A. So at -- at some point -- I don't remember
14 exactly when, you know, we wanted to start teaching
15 3D CAD to kids because 3D printers were becoming
16 popular. And we evaluated a lot of the software out
17 there for -- for kids or for use for 3D printers,
18 and there were some easy ones to use but they
19 weren't very educational in terms of, you know, what
20 we could teach.

21 And so one of our staff had the idea to --
22 to use -- to build a system to use an interface that
23 was like the Scratch programming system, but instead
24 of building a -- like, a program or a story like you

1 could do in Scratch, you would actually use it to
2 build 3D models.

3 So we thought, great, he worked on it -- he
4 worked and built a prototype. We actually taught a
5 class using that prototype. The kids loved it. I
6 thought it was -- you know, I thought it was great
7 for a lot of different reasons. So we kept working
8 on it, and I applied for a grant through DARPA to
9 kind of improve -- improve the system. We did get
10 that grant.

11 And so we used that money to help continue
12 improvements with the system and built a host of
13 training modules and whatnot. So that's -- that's
14 that grant.

15 Q. In 2014, you also start working at
16 BlocksCAD, Inc.; is that right?

17 A. Yeah. I mean, that's -- we did then spin
18 out this -- this -- this 3D CAD program as a
19 separate company, and -- and I -- I mean, I was
20 helping to run it and managing the grant and making
21 sure we made all the deliverables; but -- but with
22 respect to the company, I had hired someone who was
23 kind of running BlocksCAD internally and, you know,
24 working with the classes that we taught and things

1 like that. And he became -- he kind of took over
2 the company once we spun it out.

3 So I wasn't really working day to day with
4 BlocksCAD, but I was a member of the board.

5 Q. Are you still a member of the board?

6 A. Yes.

7 Q. Dr. Houh, in September of 2020, you
8 enrolled in a MicroMaster's program at MIT; is that
9 correct?

10 A. It's a online certificate program, but it
11 wasn't really MIT. It's MITx, which is this related
12 online effort.

13 Q. On page 1 of your CV, you refer to it as a
14 MicroMaster's program. Is that the right term for
15 it?

16 A. I think that's what they call it
17 themselves.

18 Q. And it says that it culminates in a
19 MicroMaster's certificate which you expected in
20 2002.

21 Have you gotten that MicroMaster's
22 certificate?

23 A. No. So I've taken four of the five
24 classes. The fifth class is a set of exams covering

1 all four courses, and I got so busy that I haven't
2 had time to study for it. So I hadn't enrolled in
3 the -- in the -- in these comprehensive exams yet.

4 So, no, I still don't have that, and I'm
5 still too busy to kind of review everything to take
6 those exams.

7 Q. I'd like to turn to your declaration now
8 and ask you about two terms in particular.

9 So in Paragraph 5B of your declaration, you
10 refer to your knowledge and experience based upon
11 your work in the field of financial transfer
12 systems.

13 But if you go to page 22 -- I'm sorry, to
14 Paragraph 22 of your declaration, you say "I am
15 familiar with financial payment systems."

16 And my question is whether you're drawing a
17 distinction between financial transfer systems and
18 financial payment systems?

19 A. I mean, I am using different words. I
20 don't know that there's a distinction in that sense
21 that it's meaningful for this.

22 But, yeah, I mean, it does use two
23 different phrases there.

24 Q. It's fine that you used two different

1 phrases. I'm just trying to figure out whether, in
2 your opinion, they're synonymous with each other or
3 whether you view them as not synonymous.

4 A. I mean, I don't think they're entirely
5 synonymous, but -- but the distinction, I don't know
6 if it really matters for the purposes of what I
7 write there.

8 Q. Can you tell me what you see as the
9 distinction?

10 A. Well, a transfer might not necessarily be a
11 payment. So if I move money from one bank account
12 of mine to another bank account, it's still a
13 transfer, but that wasn't necessarily a payment for
14 anything.

15 Q. Are there any other distinctions?

16 A. I mean, I can't think of any other examples
17 as I sit here right now, but that's what came to
18 mind.

19 Q. So sticking with Paragraph 22 of your
20 declaration, about midway through the paragraph,
21 there's a sentence that starts out "Based on the
22 technologies disclosed in the '196 Patent, I believe
23 that a POSITA would have had a working knowledge of
24 mobile payment systems and techniques pertinent to

1 the '196 Patent."

2 And my question is what are you referring
3 to when you say "techniques pertinent to the '196
4 Patent"?

5 A. I mean, I'm referring to the kind of
6 examples that -- that the '196 Patent is talking
7 about if you look at the abstract and the spec and
8 whatnot.

9 Q. Can you be more specific than that?

10 A. I mean, one example would be just the kind
11 of things that are talked about in the abstract.

12 For example, the '196 Patent talks about
13 embodiments are directed to performing a transaction
14 using a third-party mobile wallet, performing a
15 transaction using a third-party point-of-sale system
16 into making a purchase from a third-party mobile
17 wallet provided by a third-part mobile wallet
18 provider.

19 So, I mean, there are numerous examples.
20 That -- that -- that would be one that the abstract
21 is talking about.

22 Q. And, in your view, a POSITA would have had
23 a working knowledge of those things?

24 A. I mean, what I'm saying is that the POSITA

1 would have had a working knowledge of mobile payment
2 systems and techniques pertinent to the '196 Patent.

3 So that is something that describes, and
4 whatever technique -- techniques to carry those out
5 are -- would be pertinent.

6 Q. Would knowledge of third-party
7 point-of-sale systems be one of the techniques
8 that's pertinent to the '196 Patent?

9 A. I mean, I think that there would be
10 techniques used on that mobile third-party
11 point-of-sale system and whatever -- you know, there
12 would be pertinent techniques. That -- and that's
13 just one of the examples from -- from the '196.

14 Q. Would the operation of mobile wallets have
15 been one of the techniques pertinent to the '196
16 Patent?

17 A. I mean, the patent does talk about various
18 things that can be done with mobile wallets.

19 If you look, for example, at Column 1,
20 starting around line 39, there's this whole section
21 that talks about all these different things that can
22 be done with mobile wallets.

23 Q. So, in your view, would a POSITA have had a
24 working knowledge of mobile wallets?

1 A. I think that's an example of -- of what's
2 talked about in the '196. So, you know, it is what
3 I say here in Paragraph 22.

4 Q. Well, in Paragraph 22, you just use the
5 general phrase "techniques pertinent to the '196
6 Patent," and I'm asking you whether the operation of
7 a mobile wallet is one of the techniques pertinent
8 to the '196 Patent that you're referring to?

9 A. Right. I mean, so the examples given in
10 the spec are -- are -- would be related to this,
11 which is the cost there about adding a credit card
12 or a debit card account to a third-party mobile
13 wallet; depositing funds in a third-party mobile
14 wallet; withdrawing funds from a third-party mobile
15 wallet.

16 So those are things that you could call our
17 techniques that could be applied to a mobile wallet,
18 that are pertinent to a mobile wallet. And there
19 are more examples, but those -- those are some of
20 the examples given in the '196.

21 Q. Prior to November 21st, 2011, that's what
22 you identify as the priority date, had you taken any
23 courses that taught techniques about how mobile
24 wallets worked?

1 A. I mean, not formally about -- about mobile
2 wallets, but a lot of cryptographic techniques we
3 studied as part of the -- our research in -- in
4 networking.

5 Q. Let's look at Paragraph 39 of your
6 declaration, please. Let me know when you're there.

7 A. Okay.

8 Q. So in that paragraph, you say that the
9 claims are to be construed under the so-called
10 Phillips standard under which claim terms are given
11 their ordinary and customary meaning as would be
12 understood by one of ordinary skill in the art in
13 lights of the specification and prosecution history.

14 Do you see that?

15 A. Yes.

16 Q. And then in Paragraphs 41 to 44, you
17 discuss a particular claim term which you refer to
18 as, quote, "debit the mobile wallet by the specified
19 amount of funds," closed quote.

20 Do you see that?

21 A. Yes.

22 Q. Okay. If we put aside that limitation, the
23 one that you talk about in Paragraphs 41 through 44,
24 did you give all of the other limitations in the

1 claims of the '196 Patent their ordinary and
2 customary meaning?

3 A. It would -- I would have applied, since
4 this is the only term that I -- I expressly talked
5 about the construction of, all the other terms I did
6 analyze using the plain and ordinary meaning in
7 light of the specification. But it's -- and
8 prosecution history at the time that you mentioned.

9 So I did consider that in the context of --
10 of the spec, the plain and ordinary meaning.

11 Q. Dr. Houh, it's almost noon, and I would
12 like to take a short break. But before we decide on
13 the length of the break, I wanted to ask you when
14 you were thinking about having lunch.

15 A. Yeah, thank you for asking because I could
16 eat now or I could wait, like, another hour.

17 Q. Could we go off the record?

18 MR. BOWSER: Yes.

19
20 (Break from 12:00 p.m. to 12:30 p.m. was
21 taken in the proceedings.)
22

23 BY MR. GOLUB:

24 Q. Dr. Houh, did you speak to anybody at the

1 break?

2 A. Yes.

3 Q. Who did you speak to?

4 A. My sister and my brother-in-law.

5 Q. You didn't talk about this case, did you?

6 A. No.

7 Q. Do you have a copy of the '196 Patent?

8 It's Exhibit 1001.

9 A. Yes, I do.

10 Q. Can you turn to Column 7.

11 A. Okay.

12 Q. I'm going to read to you a sentence that
13 starts on line 14 of Column 7.

14 "As used herein, a mobile wallet
15 application is a mobile wallet application installed
16 on a SIM card or elsewhere on a mobile device."

17 And my question is in the context of that
18 sentence, what does "installed" mean?

19 A. I think one of the things that a person of
20 ordinary skill would understand would -- would
21 include is that that application is -- is installed
22 in a way -- on a SIM card in a way that it -- the
23 application -- it would include, for example, the
24 application files being resident on a SIM card or

1 elsewhere on a normal device.

2 Q. Dr. Houh, can code execute on a browser
3 without being installed on the device?

4 MR. BOWSER: Objection; scope.

5 THE WITNESS: I mean, the code typically
6 would be referenced on -- on the computer,
7 even if were referenced on a web page to
8 run, and then some -- some, for example,
9 plug-ins for a browser would -- would be
10 installed before being able to be run.

11 BY MR. GOLUB:

12 Q. Are there instances where code can execute
13 on a browser without being installed on -- on the
14 machine?

15 A. I mean, there can be references to embedded
16 flash -- flash files, for example, where you needn't
17 have the flash file resident on the computer before
18 you visit a web page; but after you visit a web
19 page, the browser might go out and fetch, for
20 example, a flash file to run it. But it would be
21 stored on a computer at that time.

22 Q. So can you think of any examples where a
23 browser can execute code without having that code
24 installed on the browser?

1 MR. BOWSER: Objection; scope.

2 THE WITNESS: I mean, I don't -- I don't
3 know of any case I can think of right here
4 sitting where the code could be run where it
5 weren't resident somewhere on the computer.
6 For web pages, that is. For web, you know,
7 web requests, things embedded in them like
8 JavaScript functions or sometimes they
9 reference JavaScript files themselves, which
10 would be downloaded to the computer first.

11 BY MR. GOLUB:

12 Q. Dr. Houh, do you draw a distinction between
13 a web application being installed on a mobile device
14 and a web application being stored on a mobile
15 device?

16 A. I mean, sometimes application installation
17 requires other further -- further steps that -- that
18 -- beyond just having the application resident.

19 But that's not necessary, necessarily, for
20 things like updating registry entries and things
21 like that.

22 Q. So, in your view, as long as something is
23 stored on a computer, it's installed on the
24 computer?

1 A. I mean, I think -- I think downloading a
2 file so it's resident on a computer and then running
3 it could be an example of an install, but I think
4 "install" may include further types of -- of
5 further -- further steps that could go beyond simply
6 downloading.

7 But if you have downloaded a computer and
8 then -- I'm sorry, excuse me, an application or a
9 program or a script file and you run it from your
10 computer, then -- then, you know, effectively, it's
11 resident on the -- your computer so you can run it.

12 And so I think at least for the purposes of
13 getting that web page, it does become -- it does get
14 downloaded and run.

15 Q. So is it your view that if code is
16 downloaded and then run, that meets the definition
17 of being installed?

18 A. Are you asking for the purposes of any
19 particular claim? I don't -- I'd have to look, but
20 I don't remember offhand if the claims use that
21 phrase or not.

22 Q. I'm really just asking about it in the
23 context of the sentence I pointed to in Column 7,
24 lines 14 to 16.

1 A. I mean, you know, I think what it's
2 disclosing here is that, you know, if the
3 application is installed on a SIM card or somewhere
4 in the mobile device, for example, you would be able
5 to open it in some way where the system knows where
6 it is because it's -- it's there.

7 I mean, you know, with the web examples
8 we're talking about, the browser kind of knew when
9 it was downloading them where to execute them from.
10 I wouldn't say simply downloading some application
11 that the system wouldn't know how to open would be,
12 in that sense, installing.

13 But, I mean, this is certainly talking in a
14 spectre about the application being installed on a
15 SIM card or on a mobile device itself.

16 Q. And so, in your view, does code that's
17 resident on the device itself and then run meet the
18 definition of being installed on a SIM card or
19 elsewhere on a mobile device?

20 A. I think if there's a way to -- to get --
21 for a user to get to an application and start it,
22 then -- then I would think that that would be an
23 example of some application that would be installed.
24 I mean, because, in that sense, if it wasn't

1 installed, you couldn't -- the user couldn't go find
2 it some place and run it.

3 Q. Dr. Houh, can you turn to Paragraph 65 of
4 your declaration. Paragraph 65, not page 65.

5 A. Okay.

6 Q. So in Paragraphs 65 to 71, you provide an
7 analysis that matched the preamble of Claim 1 of the
8 '196 Patent to Dill. Is that correct?

9 A. Yes, I think that's right.

10 Q. And you refer to the preamble as Element
11 1.0. Is that the numbering scheme you use?

12 A. Yes.

13 Q. So when I talk about Element 1.0, I'm using
14 that to describe the preamble. Okay?

15 A. Sure.

16 Q. So you testified earlier that you gave all
17 of the terms in the claim, except "debit the mobile
18 wallet by the specified amount of funds", their
19 ordinary and customary meaning.

20 Do you remember that?

21 A. I did. But it's in the context of the
22 specification and history at the time of the
23 invention.

24 Q. Thank you for that. In connection with

1 Element 1.0, did you apply the ordinary and
2 customary meaning of the terms in that element as
3 they would have been understood based on the
4 specification and the prosecution history?

5 A. That's how I considered the plain and
6 ordinary meaning of these terms.

7 Q. So in Paragraph 69 of your declaration --
8 let's turn to that for a second.

9 A. Okay.

10 Q. So in Paragraph 69, you have a annotated
11 diagram of Figure 9 of Dill; correct?

12 A. Yes.

13 Q. And there you identified mobile wallets 125
14 and 130; correct?

15 A. Yeah. In the example in the Figure 9, I do
16 point to mobile wallets at the bottom in 125 and
17 130.

18 Q. So are you mapping mobile wallets 125 and
19 130 to the mobile wallet in the preamble?

20 A. I am, generally. And this is just an
21 example of mobile wallets, but certainly Dill has
22 more discussion about mobile wallets than -- than
23 just in this figure.

24 Q. In Figure 9 of Dill, are the mobile wallets

1 125 and 130 shown as residing on the mobile network
2 operator 120?

3 A. In this example in Figure 9, what it
4 depicts is -- is the boxes 125 and 130 inside
5 another box, 121, which is itself inside a box
6 labeled 120 and labeled mobile network operator.

7 But that's just in this example of Figure
8 9. There's more discussion about mobile wallets
9 throughout the -- the specification of Dill.

10 Q. Can you turn to Paragraph 81 of your
11 declaration.

12 A. Okay.

13 Q. So in Paragraphs 81 through 86 of your
14 declaration, you provide an analysis that maps
15 Element 1.3A of Claim 1 to Dill; is that correct?

16 A. I mean, the discussion goes from Paragraph
17 81 through 86.

18 Q. Thank you for that. So in your analysis of
19 Element 1.3A, did you apply the plain and ordinary
20 meaning of the terms in that element as they would
21 have been understood in light of the specification
22 and the prosecution history by a person of ordinary
23 skill in the art?

24 A. Yes. And, further, at -- at the time of

1 the invention.

2 Q. Thank you for that. So in Paragraph 81 of
3 your declaration, you map Dill's transfer options
4 module 145 to the integrations here in the claim; is
5 that correct?

6 A. Yes. That's what -- and that is how to
7 read that -- the sentence that says "transfer
8 options module 145, and then in parentheses,
9 (integration)" here.

10 Q. And then at the end of that sentence, you
11 map Elements 125 and 130 from Dill to a mobile
12 wallet; is that correct?

13 A. I do say that there. But that's because
14 the -- Dill does talk about these mobile wallets
15 being -- I can point you to portions of Dill where
16 they aren't running on mobile devices or executing
17 on mobile devices, and Dill has a discussion of
18 that.

19 And so that's -- and that's what I'm saying
20 there is that the devices on which the mobile --
21 mobile wallets 125 and 130 are running on are those
22 mobile devices.

23 Q. You don't say that here, do you?

24 A. Yeah, I mean, that's -- that's -- I -- the

1 words are slightly different, but that's -- that's
2 what -- that's what I mean by that. I'm not -- 125
3 and 130 are labeled in Figure 9 as the M wallets. I
4 think M wallet is the word they use. If you look at
5 Dill, they -- they're running -- they're executing
6 on mobile devices.

7 And I may discuss that elsewhere in my
8 declaration somewhere, and -- and there are
9 certainly some citations in Dill I can point you to,
10 but I think I do talk about that somewhere in my
11 declaration.

12 Q. So you're not saying that Elements 125 and
13 130 are themselves mobile devices, are you?

14 A. Well, I mean, they are wallets that are --
15 that are on a mobile device. And, really, that's
16 what -- that's what I'm saying. I may discuss that
17 more in this section or another section.

18 Yeah, I mean, I'll have to look or -- or
19 look at Dill to point you to that, but Dill does
20 discuss these things being -- one example being on a
21 mobile device.

22 Q. Regardless of whether the mobile wallet is
23 or isn't on a mobile device, is it your position
24 that the mobile wallet itself -- so Item 125 or Item

1 130 -- is a mobile device standing alone?

2 MR. BOWSER: Objection; form.

3 THE WITNESS: So I just want to point
4 you to a few things. If you look, for
5 example, at Paragraph 45 of Dill.

6 BY MR. GOLUB:

7 Q. No. I'm waiting for an answer to my last
8 question.

9 MR. GOLUB: I just want to ask the court
10 reporter to read it back.

11 MR. BOWSER: Objection. Just -- he was
12 answering and then --

13 THE WITNESS: I mean, I was trying to
14 answer your last question; but if you want
15 to repeat the question, that's fine.

16 MR. GOLUB: Let's repeat the question,
17 and then you can answer. Okay. I just want
18 to focus on it because we had a pause.

19
20 (The question was read back as follows:
21 "Regardless of whether the mobile wallet is
22 or isn't on a mobile device, is it your
23 position that the mobile wallet itself -- so
24 Item 125 or Item 130 -- is a mobile device

1 standing alone?")

2
3 THE WITNESS: Yeah. So, again, I want
4 to point you to some things that are in the
5 Dill and, first of all, there are numerous
6 places where it says the mobile device can
7 execute a mobile wallet application; 45 is
8 one example.

9 But if you look at Paragraph 63, it
10 talks about "It should be appreciated that
11 alternate embodiments of the Computer System
12 200" -- and these are computer systems used
13 throughout Dill -- "may have numerous
14 variations from that described above. For
15 example, customized hardware might also be
16 used and/or particular elements might be
17 implemented in hardware; software, including
18 portable software such as applets, or both."

19 So it is talking about these things
20 being implemented as hardware on their own
21 on these computer systems, which -- which
22 are like the computer systems that the
23 mobile wallet can be run on.

24 So -- so there's some examples where it

1 could be a standalone. Dill talks about it
2 being potentially a standalone, independent
3 piece of hardware.

4 But -- but certainly Dill does, in
5 numerous places, not just 45, I think, lists
6 the same sentence two or three or four other
7 times. That the mobile device executes --
8 can execute a mobile wallet application.

9 BY MR. GOLUB:

10 Q. Are you done with your answer?

11 A. Yes.

12 Q. Does Dill say that the mobile device can
13 execute the mobile wallet?

14 A. Well, at least in 45, it's saying the
15 mobile device can execute the mobile wallet
16 application.

17 And then again in 63, it talks about
18 alternative embodiments of these general systems
19 that are hardware or software or both.

20 Q. Paragraph 45 talks about a mobile wallet
21 application; but in Paragraph 81 of your
22 declaration, you're referring to the mobile wallets
23 themselves, 125 and 130, as being mobile devices.

24 And so my question is in Paragraph 45 of

1 Dill, does it say that mobile wallets 125 and 130
2 are mobile devices?

3 A. So Dill talks about these mobile wallets
4 being -- and -- talks about mobile wallets and
5 separately talks about mobile wallet applications.

6 And one -- Paragraph 45 talks about the
7 mobile wallet -- sorry, the mobile device, 125 and
8 130. And I do use those labels when I'm trying to
9 explain to you what I mean, which is that certainly
10 the application to implement the mobile wallet can
11 be run on these mobile devices. That's -- that's
12 what -- that's what, for example, Paragraph 45 says.

13 And separately in Paragraph 63, these --
14 these mobile wallets can be their own hardware, for
15 example. And so when he -- when I'm saying mobile
16 devices 125, 130, when -- you know, that -- that's
17 part of what I'm saying is that, sure, mobile wallet
18 application can be run on a mobile device, and when
19 you run the application, its functioning as -- as
20 the mobile wallet.

21 And when you implement the mobile wallet
22 application and hardware, that hardware can then be
23 the mobile wallet.

24 And so it's -- it's -- you know, I -- yeah;

1 perhaps this was not as eloquent as you're looking
2 for, but that's what I mean when I say this in
3 Paragraph 81.

4 Q. Is it your view that Dill teaches that the
5 mobile wallets 125 and 130 can be implemented in
6 hardware?

7 A. I mean, what it's saying here it's talking
8 about the computer system 200, which is generally
9 applied to all the computer systems in Dill.

10 It says that "It should be appreciated that
11 alternate embodiments of Computer System 200 may
12 have numerous variations from that described above.
13 For example, customized hardware might also be used
14 and/or particular elements might be implemented in
15 hardware; software, including portable software,
16 such as applets, or both."

17 And what that's saying is that you could be
18 implementing customized elements in hardware, or
19 particular elements would be implemented in
20 hardware.

21 And that's suggesting that you could have
22 this hardware -- that -- it's suggesting that --
23 that the computer -- a computer system like a mobile
24 device could also be implemented -- a mobile device

1 running the mobile wallet application could be
2 implemented as hardware.

3 And that's what this is suggesting,
4 exclusive of software, because it says hardware,
5 software, or both. So it could just be hardware.
6 It could just be software, like an applet, like
7 portable software, or -- or hardware and software
8 together. So that's what Paragraph 63 is
9 suggesting.

10 But certainly, you know, 45 and numerous
11 other places talk about a mobile -- mobile device
12 can execute a mobile wallet application.

13 Q. Does Dill contemplate that the sender and
14 the recipient each have their own mobile phone?

15 A. So if you look at Paragraphs 53 and 54 of
16 Dill, for example, it talks about these mobile
17 network operator systems can include and/or execute
18 a mobile wallet application or service and,
19 generally speaking, the mobile wallet application
20 used in each mobile wallets for one or more
21 subscribers, such as the sender and/or recipient to
22 the mobile wallet service.

23 And so -- and then if you look at the
24 application can be run on the -- on the mobile

1 device. That's saying that -- that a person of
2 ordinary skill would understand that these -- these
3 mobile devices may be separate mobile devices within
4 one or more mobile network operator system.

5 Figure 9 shows them within one, but
6 elsewhere in Dill talks about that there could be
7 many different mobile network operators all with
8 wallets, and you can actually send between wallets
9 on different operators.

10 And then -- and then 54 talks about
11 initiating a transfer from one wallet to another.

12 So I think Dill overall teaches that --
13 that these mobile devices can be part of different
14 mobile operator networks. And I can look more for
15 that cite. I think it's in -- I don't -- it's in
16 Dill somewhere. I -- but if you want me to take the
17 time to look for it, I will.

18 Q. I must not have made my question clear.

19 Dill contemplates that the sender 105 has a
20 mobile phone; right?

21 A. I mean, Dill does talk about one of these
22 mobile devices that are part of this system and --
23 and, yeah, and -- I think it talks about phones
24 somewhere. I don't remember this word for word, but

1 I thought I talked about that somewhere in my
2 declaration.

3 Q. So my question is if we look at Figure 9,
4 where in that figure does the mobile device of the
5 sender go? Does it go with the box 105?

6 A. Well, I mean, there are a bunch of
7 different examples given in the Dill specification.

8 For example, for sender 105, it says --
9 this is Paragraph 51 -- can access the services of a
10 money transfer facilitator via website with money
11 transfer facilitator -- facilitator 140 and initiate a
12 money transfer from a secure account owned by the
13 sender.

14 That's one example. So in this case, the
15 sender is kind of like the user. In this example,
16 they're using a computer. But they're also -- it's
17 talking about these mobile wallet applications and
18 that they can initiate money transfer applications
19 from the user of a person using either a computer or
20 a mobile device running a mobile wallet application,
21 for example.

22 And so I think the box -- it could be --
23 the device could be associated with the sender and
24 that's the device they use, but the spec both in

1 Figure 1 and Figure 9, which share box 105, talk
2 about it as more of the -- the person who initiates,
3 and that they might use such things such as a
4 website or -- or a device.

5 But in that sense, I mean, it's the user
6 using the device. So I don't think this fine
7 distinction -- I don't recall that it -- you know,
8 if it was a fine distinction that I might have
9 talked about in the context of the analysis or not.
10 I mean, you can point me there if you want, but
11 that's -- that's just looking at that right now.

12 Q. So is it your view that the mobile device
13 is associated with sender 105 but might not be in
14 the box 105?

15 A. In that particular example given, Figure 1,
16 which is just an example, it -- it -- it's talking
17 about the sender being -- let me look at that
18 paragraph where it is now -- being something that
19 can access the user -- the services of a money
20 transfer facilitator via a website, and that could
21 be the sender or the sender using their -- their
22 computer to do it.

23 It's -- it's -- it's really just what --
24 the example given in Dill. So it's -- I mean, a

1 person associated with a computer or mobile device
2 they're using to initiate a transfer could be --
3 could be an example of what a sender is.

4 Q. Well, the claim speaks about mobile
5 devices, and you just mentioned computer. So do you
6 view a desktop computer as a mobile device?

7 A. No. I wouldn't say it is, but I'm saying
8 Dill -- Dill does talk about mobile devices
9 literally using the same phrase, I think. "Mobile
10 device."

11 And that's in, for example, Paragraph 45,
12 was it, we were looking at and -- and throughout --
13 throughout Dill. It talks about mobile devices that
14 execute mobile wallet applications.

15 Q. Dr. Houh, would you expect that the
16 sender's mobile device -- the physical device would
17 be shown in Figure 9 within box 120, the mobile
18 network operator?

19 A. I mean, I don't think it necessarily has to
20 be Figure 9; just an example. It's just an
21 exemplary -- it's just -- it's a block diagram
22 illustrating another exemplary system for making
23 financial transfers according to one embodiment of
24 an invention.

1 Actually, in the description of Figure 9,
2 it talks about doing everything that's in Figure 1
3 if you look at that description. And so I -- I --
4 being an abstract, more thought guy, I would look to
5 the description of the figure and the description of
6 Dill itself to -- and I think a POSITA would do that
7 too -- to understand the whole context of Dill.

8 Q. I think earlier I heard you say that the
9 sender's mobile device might be inside mobile
10 network operator 120. Did you say that?

11 A. I don't remember what -- all the words I
12 said. The -- but there could be different mobile
13 device operators, and Dill does teach that. He
14 talks about it somewhere.

15 And, you know, you'd know that, like, if
16 you were using one mobile device, it might be
17 associated with one particular mobile network
18 operator, and a different user might have a
19 different mobile network operator.

20 And Dill does talk about the ability to,
21 you know, even with people using different mobile
22 network operators, can -- can perform these --
23 what's described in Dill.

24 And so, I mean, you might consider a phone

1 part of a mobile network operator system because
2 it's attached to a particular mobile network
3 operator, but I think Figure 9 is just -- is a block
4 diagram. So, I mean, you -- you look to the
5 description of Figure 9 in the whole context of
6 Dill, and that's what a POSITA would do to
7 understand what Dill teaches.

8 Q. Do you understand that in the context of
9 the example of Figure 9, that Dill teaches that the
10 sender's mobile phone would be inside the box
11 labeled mobile network operator 120?

12 A. I mean, it doesn't label -- Figure 9
13 doesn't label these devices as being -- you know, I
14 -- I said they were devices because there is --
15 they're teachings in Dill that a mobile device
16 executes a mobile wallet application, and that's --
17 that's the mobile wallet application being depicted
18 in 125 and 130 of Figure 9. And so those are the
19 mobile devices.

20 But the devices themselves, I mean, they --
21 one could consider them part of a mobile network
22 operator system; and, remember, there are -- there
23 are multiple mobile network operator systems. So
24 they could be split up.

1 There could have been two boxes, you know,
2 in the sense that the sender and recipient have
3 mobile wallet applications and mobile devices that
4 were part of two different mobile network operators,
5 but this is just an example of -- of one -- one
6 example.

7 And based on the teachings of Dill, you'd
8 understand that the devices are running mobile
9 wallet applications. The devices can be associated
10 with different mobile network operators. And Dill
11 teaches that -- that what's taught in Dill can be --
12 can be run even between people who are using mobile
13 wallet applications on mobile devices in
14 different -- having different mobile network
15 operators.

16 Q. So it may be the case that the mobile phone
17 of the sender is, in one example, actually within
18 the box labeled mobile network operator 120. That's
19 the way you see Dill's disclosure?

20 A. I mean, I'm not sure why it's important to
21 you to actually put the device in the box. Figure 9
22 shows what it shows. Right.

23 But the overall spec of Dill teaches what
24 it teaches, and what it's teaching is that there are

1 mobile network applications -- mobile wallet
2 applications. They can be run on mobile devices.
3 The mobile devices can be part of one network or --
4 or different mobile devices can be part of other
5 mobile network operator systems.

6 And regardless of who's operating the core
7 parts of the network or the -- or the mobile network
8 operators themselves, Dill -- I mean, I can find
9 that -- I can find that cite. I do remember that
10 from Dill. That -- that you can still perform these
11 -- these transactions taught in Dill between the
12 different mobile wallet -- mobile wallets and --
13 that are part of different mobile operator systems.
14 And so that's what overall it's teaching.

15 I'm not sure, like, that it's necessary to
16 put the box -- the mobile device physical box within
17 -- within that box as you want to. It could make
18 sense that way still, but it doesn't necessarily
19 have to be there. This is just a block diagram.

20 So you'd look to the description of a
21 figure and a general description to under- -- for a
22 POSITA to understand what it's teaching.

23 Q. Let's go to Paragraph 87 to 90 of your
24 declaration.

1 A. Okay.

2 Q. In Paragraphs 87 to 90, you are mapping
3 Element 1.3B of Claim 1 to Dill; correct?

4 A. In this section, that's part of what I'm
5 discussing here.

6 And I might add that, like, not every term
7 is analyzed necessarily in this section. It could
8 have been the antecedent where I analyzed, you know,
9 the mapping of previous terms. So you might -- it's
10 not that all the analysis is here.

11 This is the -- kind of the bulk of the
12 analysis, but there -- told me to refer to other
13 sections to understand all the mappings.

14 Q. Thank you for that. I understand.

15 In your analysis of Element 1.3B, did you
16 give all of the claim terms in that element their
17 ordinary and customary meaning?

18 A. I would have applied that because the --
19 the -- that term debit -- that term that starts with
20 debit is not in this claim element.

21 So all the other claim elements I applied
22 the plain and ordinary meaning in the context of the
23 specification and prosecution history at the time of
24 the invention.

1 Q. In --

2 A. Of the '196.

3 Q. Are you done? I'm sorry.

4 A. Yeah, I'm sorry, I -- here it's not clear
5 whether it's the Dill or '196. It's '196.

6 Q. Okay. And can you look at Paragraph 87 of
7 your declaration.

8 A. Okay.

9 Q. And do you see toward the end of the
10 sentence there's a reference to web service
11 mechanisms for interfacing with the mobile wallet
12 application 121?

13 A. Yes.

14 Q. What are the web services mechanisms that
15 you are referring to in Dill in Paragraph 87 of your
16 declaration?

17 And, Dr. Houh, before you answer, when
18 you -- when you answer and you're going to go to a
19 specific paragraph of Dill, would you pause for a
20 second and let me get there so I can look at it with
21 you?

22 A. Sure. Sorry. I will do that.

23 Q. Okay.

24 A. Okay.

1 MR. GOLUB: Okay. We'll have them read
2 the question back.

3
4 (The question was read back as follows:
5 "What are the web services mechanisms that
6 you are referring to in Dill in Paragraph 87
7 of your declaration?")

8
9 THE WITNESS: So I do more of the
10 analysis claim to Dill in the -- in the
11 problem paragraphs.

12 So one -- one example is where Dill
13 talks about transfer option module 145, how
14 it facilitates communication between mobile
15 wallets within a mobile wallet application.
16 It talks here in this block quote in
17 Paragraph 88, which comes from Paragraph 101
18 in -- in Dill, which talks about the money
19 transfer facilitator system 140,
20 "additionally or alternatively compromise
21 one or more interfaces, 136 to 138, for
22 conducting money transfer transactions."

23 And if you actually look at the figure
24 in Dill, one of them is a web interface 137

1 that's described in the spec.

2 But if you look at Figure 9, I think --
3 and you have to compare that to the '196
4 Patent, Figure 1, you'll see that the --
5 that the money transfer facilitator has IVR
6 interfaces, and that's mirrored in Figure 1
7 of the '196. And that's -- that's like a
8 phone system interface.

9 You call in, use your touchtone. And
10 then one -- one of them is a web interface,
11 137, and that, similarly, mirrors what's in
12 Figure 1 of -- of the -- of the '196 Patent,
13 and that's labeled "web," and so is the box
14 in Figure 9 of Dill.

15 So -- so that's an example. And I give
16 further analysis and examples in this -- in
17 the next two paragraphs as well.

18 BY MR. GOLUB:

19 Q. So are you mapping the box on Figure 9 that
20 says Web 137 to the web service communication
21 mechanisms in Element 1.3B?

22 A. That's an example of one -- one of the
23 mappings, and it really mirrors the -- the -- the
24 same Figure 1 of '196 Patent -- of the '196 Patent.

1 Q. Okay. Let's go to Paragraphs 91 through 96
2 of your declaration.

3 A. Okay.

4 Q. In Paragraphs 91 through 96 -- I'm sorry.
5 Strike that.

6 In Paragraphs 91 through 95 of your
7 declaration, you provide an analysis mapping Element
8 1.3C of Claim 1 to Dill; is that correct?

9 A. Yes.

10 Q. And in that analysis, did you apply the
11 ordinary and customary meaning of the terms in
12 Element 1.3C as they would have been understood by a
13 person of ordinary skill in the art at the time of
14 the invention based on the specification and the
15 prosecution history?

16 A. That's how I would have done my analysis
17 for all the terms that are not -- or construe, which
18 this does not include that term that I talk about in
19 the claim construction section.

20 Q. Can you look at the reproduction of
21 Figure 9 on page 50 of your declaration.

22 A. Okay.

23 Q. My question is you have four sets of double
24 arrows that you've labeled "communications

1 channels."

2 Do you see that?

3 A. I do see that, yes.

4 Q. Are you mapping the channel between IVR 136
5 and money transfer facilitator 140 to one of the
6 communications channels in Element 1.3C?

7 A. I mean, I think that's one of the examples,
8 which comprise of plurality of different
9 communications -- communication channel that was
10 required by 1.3C.

11 Q. Let's look at Paragraphs 96 through 92 --
12 96 through 102 of your declaration.

13 A. Okay.

14 Q. In Paragraphs 96 through 102 of your
15 declaration, are you providing an analysis that maps
16 Element 1.3D of Claim 1 to Dill?

17 A. Yes.

18 Q. And in that analysis, did you apply the
19 ordinary and customary meaning of the terms in
20 Element 1.3D as they would have been understood by a
21 person of ordinary skill in the art at the time in
22 light of the specification and the prosecution
23 history?

24 A. Yes.

1 Q. In Paragraph 96 of your declaration, the
2 sentence ends with the statement that "Dill's
3 transfer facilitator system 145 is configured to
4 receive, among other things, text messages from
5 mobile devices 125 and 130."

6 Do you see that?

7 A. Yes.

8 Q. What passage of Dill can you point to that
9 teaches that transfer facilitator 145 receives text
10 messages from mobile devices?

11 A. So the way this is laid out is that the
12 first paragraph of the section typically summarizes
13 what I'm going to discuss in the rest of the
14 section. So the cite might not be right there.

15 But if you go look down to Paragraph 100
16 and 101, I talk there about how Dill teaches that
17 communications may also be sent by SMS over the same
18 interfaces. And that's an example of SMS.

19 And then a person of ordinary skill would
20 have understood the interface to receive text
21 messages, for example, via SMS.

22 I didn't read all the words of 101, but
23 that's -- that's kind of what I'm saying in 100 and
24 101, for example.

1 Q. Well, Paragraph 101 is talking about the
2 transmission of SMS messages to Recipient 110;
3 correct?

4 A. Well, what I'm talking here are the
5 interfaces. Right.

6 So the interfaces, the example is -- is
7 that those messages can be sent that way. But the
8 interface support the text -- the text messages.
9 And those -- those communication interfaces you see
10 on the figure, they are -- they are arrowed both
11 ways.

12 Q. The interfaces 136 and 138 are mentioned in
13 the block quote on the top of page 54 of your
14 declaration; right?

15 A. Yes.

16 Q. And the sentence says, "Via one of the
17 interfaces 136 to 138, for example, by logging onto
18 a website, calling an IVR, visiting an agent
19 location, etc., depending upon the notification
20 and/or instructions provided, the recipient can
21 select a delivery option and/or provide instructions
22 for delivery."

23 Is that the sentence you're relying on for
24 the transmission of text messages to transfer option

1 -- options module 145?

2 A. I mean, it is saying, right, that the user
3 can provide their options to the system there, and
4 it is saying that -- that -- that these other
5 channels can be used to -- to send this -- it can be
6 sent to the recipient; but those -- those other
7 interfaces, for example, 138, which is included
8 there, are also a way of -- of how the recipient can
9 select the delivery option or provide instructions
10 back to the system.

11 And so I think that's why, you know,
12 talking here, that SMS message is one of the
13 examples, and, you know, sometimes you see these SMS
14 messages -- I just got one the other day that says
15 reply 1 to confirm or 2 to cancel. And that's a
16 way, for example, to provide data back using the SMS
17 interface.

18 Q. In order to transmit a text message using
19 SMS at the time of the '196 Patent, wasn't some kind
20 of Lowell air interface required?

21 MR. BOWSER: Objection; scope.

22 THE WITNESS: I mean, I think these
23 mobile networks that they -- they supported
24 these type of -- of SMS messages. I'm --

1 that's just one -- another type of
2 communication challenge interface that Dill
3 is talking about.

4 And so those are typically sent to the
5 mobile devices directly. There can be these
6 gateways that can convert them into, like,
7 emails and other things that can be accessed
8 from desktops, for example.

9 BY MR. GOLUB:

10 Q. Are you interpreting the channel between
11 the box web 137 and money transfer facilitator 140
12 as a mobile network interface?

13 A. I don't think that's what I'm saying as
14 only meets that. But, for example, you know, if you
15 call into an IVR, you could do it from a landline or
16 you could do it from a wireless phone to call into
17 an IVR; and, you know, I think at the time there
18 were also plenty of mobile web browsers available
19 which you could then also interface via the web.

20 So I don't think it requires one. I think
21 it can include -- certainly can include -- include
22 them.

23 MR. BOWSER: Counsel, we've been going
24 for over an hour. Is now a good time for a

1 break?

2 MR. GOLUB: Sure.

3
4 (Break from 1:35 p.m. to 1:45 p.m. was taken
5 in the proceedings.)
6

7 BY MR. GOLUB:

8 Q. I'd like to turn to Paragraph 118 of your
9 declaration. Let me know if you're there.

10 A. Okay. I'm here now.

11 Q. Okay. In Paragraphs 118 through 123 of
12 your declaration, you provide an analysis that maps
13 Element 1.5 of Claim 1 to Dill; correct?

14 A. This section is -- is, you know, my
15 analysis for 1.5 subject to what I talked about
16 earlier how there could be other related portions;
17 but, yes.

18 Q. And in that analysis of Element 1.5, did
19 you apply the ordinary and customary meaning of the
20 claim terms in Element 1.5 as they would have been
21 understood by a person of ordinary skill in the art
22 at the time of the invention in light of the
23 specification and the prosecution history?

24 A. Yes.

1 Q. Claim Element 1.5 refers to the computing
2 system, and it also refers to a different -- a
3 different third-party system.

4 Do you see that?

5 A. Yes.

6 Q. And then the beginning of Element 1.5
7 recites service connectors that connect the
8 computing system to a different third-party system.

9 Do you see that?

10 A. Yes.

11 Q. So is it your understanding that in Element
12 1.5, you have service connectors that sit between
13 the computing system and a different third-party
14 system?

15 A. Well, I mean, the service connectors are
16 claimed to be configured to connect the computing
17 system to the -- a different third-party system.
18 So, I mean, one example of that is -- is where they
19 would be in between. I think that would certainly
20 be an example.

21 Q. Can you think of any examples where the
22 service connector would not be in between the
23 computing system and a different third-party system?

24 A. I mean, in between is kind of an abstract

1 notion because, you know, things on a network -- I
2 mean, I -- that's -- that's a notion is that
3 somewhere along the communication path and that --
4 that's -- if that's what you mean by in between,
5 then -- then I wouldn't dispute what you're saying
6 that that would be an example.

7 Q. Let's turn to Paragraph 124.

8 A. Okay.

9 Q. Okay. So in Paragraphs 124 and 130 of your
10 declaration, you provide an analysis mapping Claim
11 Element 1.6 to a combination of Dill and Vatri;
12 correct?

13 A. Yeah. I mean, I think that's in 124
14 through 130. I think you said "and," but I probably
15 -- I think you probably meant to say "through."
16 But, sure.

17 Q. I did mean that, and thanks for correcting
18 me.

19 In your analysis of Element 1.6, did you
20 apply the ordinary and customary meaning of the
21 claim terms in Element 1.6 as they would have been
22 understood by a person of ordinary skill in the art
23 at the time of the invention based on the
24 specification and the prosecution history?

1 A. Yes.

2 Q. Element 1.6 refers to a payment handler
3 that exposes a common API for interacting with
4 different payment processors.

5 Do you see that?

6 A. Yes. I'm trying to remember the words you
7 used. I'm not sure if I see the exact words you
8 used.

9 Q. Let me try it again. And just so you can
10 follow along, you have a heading in bold for 1.6,
11 and I was just reading that heading. So it's above
12 Paragraph 124.

13 A. Oh, I thought you had said 126 for some
14 reason. Okay. I see what it says above Paragraph
15 124.

16 Q. So the element starts out with a payment
17 handler.

18 Do you see that?

19 A. Yes.

20 Q. What is a payment handler?

21 A. I mean, I applied the plain and ordinary
22 meaning, and I think the example I give of what's in
23 Vatri would be an example of what a POSITA would
24 have understood was within the scope of -- of a

1 payment handler.

2 Q. Dr. Houh, in Paragraph 128 of your
3 declaration toward the last sentence -- toward the
4 end of the sentence, there's a reference to
5 different payment processors such as eBay.

6 Do you see that?

7 A. Yes.

8 Q. So are you mapping one of the different
9 payment processors in Element 1.6 to eBay?

10 A. I mean, I think that's an example of what
11 could be a different -- what would be a different
12 payment processor, which kind of maps to these
13 other -- well, places to receive money, like -- like
14 the financial institutions -- send or receive money
15 from or to as -- as -- as is what is discussed in
16 Dill.

17 But, you know, eBay is an example of a
18 place that people -- a POSITA understood you could
19 send money to or receive money from.

20 Q. The reason you would send money to eBay, is
21 that because you would be buying an item on the
22 platform?

23 A. I mean, I think that's one example of when
24 you could send money to eBay. I mean, I've sold

1 things on eBay and I've had to send the money for
2 the fees, some of the fees that are associated
3 with -- with transactions for selling, for example.
4 I understand they have some fee structure even for
5 sellers.

6 But certainly when people are buying
7 something from eBay, that's an example of -- of --
8 you can send the money and, you know, the buyers get
9 money sent from them when they sell -- sorry -- the
10 sellers, when they sell something, they get money
11 from eBay too.

12 Q. I just turned to page 84 of your
13 declaration. Let me know when you get there.

14 A. Okay.

15 Q. So paragraph -- I'm sorry. Claim Element
16 1.10D includes an agent terminal.

17 Do you see that?

18 A. Yes.

19 Q. And in Paragraph 163 of your declaration,
20 are you saying that a website such as eBay is an
21 example of an agent terminal?

22 A. Sorry. I -- could you repeat the question,
23 please?

24 Q. Yes. In Paragraph 163 of your declaration,

1 are you saying that a website such as eBay is an
2 example of an agent terminal?

3 A. I mean, that really should be understood in
4 the context of the prior discussion that I have
5 starting at 160.

6 So, for example, in 160, I'm talking about
7 the examples giving in the '196 Patent which talks
8 -- which gives examples of agent terminals, such as
9 stores and other commercial establishments, and
10 describes agents as representatives of the MFS
11 transaction system or program and may include large
12 retailers, mobile network operators. I think
13 there's some more examples there.

14 And then Dill, in 161, teaches that its
15 financial transfer system facilitator transactions
16 with and through an agent, and it says -- it talks
17 about the agent 135 -- this is Dill from Paragraph
18 51 in a block on Paragraph 161.

19 The agent 135 can comprise a retail outlet
20 location and associated systems of the money
21 transfer facilitator 140. Generally speaking, the
22 agent 135 provides a channel by which candidates can
23 access the services of the money transfer
24 facilitator 140.

1 And then in 162, Dill talks about the money
2 transfer facilitator 140 being configured to receive
3 customer communications indicating that a customer
4 desires to purchase an item at an agent terminal for
5 a specified amount of funds.

6 And then I go on to talk about, in 163,
7 that use -- transaction use includes request for
8 transactions for specific products at a retailer as
9 well as specific example of transactions over
10 websites such as eBay.

11 So I think what I'm saying here is that the
12 -- that like -- like the '196 Patent talking about
13 how -- examples of agent terminal, such as stores
14 and other commercial establishments, have a similar
15 -- like, I mean, Dill talks generally about other
16 retail establishments but does give a specific
17 example of eBay.

18 Q. And so eBay is an example of an agent
19 terminal that's disclosed in Dill?

20 A. Well, I think eBay would be understood by a
21 POSITA to comprise an agent terminal, just like the
22 '196 Patent itself describes agents that may include
23 -- or that gives examples of agent terminals such as
24 stores and other commercial establishments and an

1 agent company, and that -- that the agents, as
2 representatives of the MFS transaction system or
3 program, may include large retailers, for example.

4 And other places of business is listed
5 citing to what I say in 160 from the '196 Patent,
6 Column 6.

7 Q. Thank you, Dr. Houh. I don't have any
8 further questions.

9 MR. BOWSER: Can you just give me ten
10 minutes. I'm going to look over my notes.
11 We'll just take a break.

12 MR. GOLUB: Sure. 2:15?

13 MR. BOWSER: Let's do 2:10.

14 MR. GOLUB: 2:10. Okay.

15 MR. BOWSER: Thank you.

16
17 (Break from 2:02 p.m. to 2:10 p.m. was taken
18 in the proceedings.)
19

20 MR. BOWSER: Dr. Houh, I have no
21 follow-up questions for you. Thank you very
22 much for your time.

23 THE WITNESS: Great. Thank you all.

24 MR. GOLUB: Dawn, do you have any

1 questions of us?

2 THE STENOGRAPHER: Mr. Golub, did you
3 order a rough?

4 MR. GOLUB: No.

5 THE STENOGRAPHER: Okay. Mr. Bowser, do
6 you want a copy?

7 MR. BOWSER: No. We'll get it when they
8 file it.

9

10 (Whereupon, the deposition was concluded at
11 2:11 p.m.)

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C E R T I F I C A T E

COMMONWEALTH OF MASSACHUSETTS
Norfolk, SS.

I, DAWN MACK-BOADEN, CSR #153120, RPR, and
a Notary Public duly qualified in and for the
Commonwealth of Massachusetts, do hereby certify
that:

HENRY H. HOUH, PH.D., the witness whose
testimony is hereinbefore set forth, was duly sworn
by me pursuant to Mass. R. Civ. 27, 29, 30, 30A, and
31, and that such testimony is a true and correct
transcription of my original stenographic notes
taken in the forgoing matter, to the best of my
knowledge, skill and ability.

I further certify that I am neither
attorney or counsel for, nor related to or employed
by any of the parties to the action in which this
deposition is taken; and furthermore, that I am not
a relative or employee of any attorney or counsel
employed by the parties thereto or financially
interested in the action.

IN WITNESS WHEREOF, I have hereunto set my
hand and affixed my Notarial seal this 27th day of
September, 2023.

Dawn Mack-Boaden

Dawn Mack-Boaden, RPR
Notary Public

My Commission Expires: August 26, 2027

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